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JAPANESE SPACE INDUSTRY—AN AMERICAN CHALLENGE

HEARING

BEFORE THE

SUBCOMMITTEE ON FOREIGN COMMERCE AND TOURISM

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

THE JAPANESE SPACE INDUSTRY—AN AMERICAN COMMERCIAL CHALLENGE

OCTOBER 4, 1989

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JAPANESE SPACE INDUSTRY—AMERICAN COMMERCIAL CHALLENGE

WEDNESDAY, OCTOBER 4, 1989

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
SUBCOMMITTEE ON FOREIGN COMMERCE AND TOURISM,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room SD–562, Dirksen Senate Office Building, Hon. John D. Rockefeller IV (chairman of the subcommittee) presiding.

Staff members assigned to this hearing: Sally Susman, professional staff member and Louis Whitsett, minority staff counsel.

OPENING STATEMENT BY SENATOR ROCKEFELLER

Senator ROCKEFELLER. There are three separate Commerce Committee meetings going on at the same time which makes this awkward, but obviously no less important—plus the fact that Secretary Baker is testifying in front of the Finance Committee on the Soviet economy and U.S.-Soviet relations. So, hopefully, our members will be coming.

I would like to make a statement to start this hearing.

One of the fundamental challenges facing the United States over the next decade is making ourselves competitive again. We have a long agenda, and a considerable way to go.

In addition to the many changes we must make in this country, one requirement for us to be able to sell our goods and services overseas is that foreign markets be open. No matter how much we improve our own competitiveness, trade barriers overseas, if allowed to persist, will block our exports. As we all know, many of our major trading partners retain significant and very damaging trade barriers. The 1988 Trade Act was written to enhance our ability to negotiate with countries that keep out our products, and the Super 301 provisions of that law were designed to form the centerpiece of a broader, more aggressive U.S. trade policy that would deal with the worst trade barriers in specific countries.

In May, USTR Ambassador Carla Hills designated three countries—Japan, Brazil, and India—under Super 301. One of the specific areas cited in Japan was the government's restrictions on procurement of satellites from other countries. This barrier is clearly directed at blocking the purchase by Japanese government agencies of American satellites which are, by any measure, the best available in the world. I find this an utterly unsupportable policy, and in today's first panel, Deputy U.S. Trade Representative Linn

Williams and Under Secretary of Commerce for International Trade Michael Farren will address this issue.

A second space-related area where America's ability to compete internationally may be threatened in the future by Japan is that of commercial launch vehicles or ELVs—expendable launch vehicles. These launch vehicles are used just once, unlike the space shuttle, to launch satellites into orbit. At the present time, the only participants in this area are the United States, Europe through the European Space Agency, the Chinese, and the Soviet Union. Japan is not yet a player, although they are now developing a launch vehicle, called the H-2, that may make them a serious competitor in the mid to late 1990's.

Why should we be concerned that Japan may become a competitor in this area 6 or 8 or 10 years from now? Tragically, recent American economic history is strewn with industries that looked at that question and said there is nothing to worry about, that we are so far ahead of Japan or other foreign competitors that they will never catch up. We have seen that in 1970, 90 percent of phonographs sold in the United States were made in the United States. Ten years later in 1980 that 90 percent figure was down to 30 percent, and today it is 1 percent. In 1980, 60 percent of color televisions sold here were made here. Seven years later the figure was 10 percent. High tech machine tools dropped from 90 percent in 1975 to under 40 percent today. And I could go on and on.

The point, of course, is that American industry and government must take a long-term view of our international competition. With competitors like Japan who have demonstrated what can happen if we don't look ahead, where government is willing to provide massive visible, as well as invisible, help to its industry, and where industry is willing to absorb huge losses for many years in order to secure market share, we can ill afford not to pay close attention to what they are doing. I am concerned that this is precisely what is happening in the American launch vehicle industry.

In 1982, the Economist wrote: "Japan's rocket program is too little, too late. They should scrap the tin-pot rocket program and use Ariane or the Shuttle instead." This attitude is all too reminiscent of the view in the 1960's that the Japanese can only make cheap cameras and cheap clothes. I am astonished and appalled that anyone could hold such a view today.

Before we turn to the first panel, let me put today's hearing into context. Our witnesses will discuss specific aspects of the United States/Japan space relationship, but I think it will help us all if I start with a brief review of the Japanese space program and the history of the bilateral relationship.

Japan's space research program began in 1955. In 1970, Japan launched its first satellite, a scientific one, similar in size to Sputnik and Explorer. In 1969, the National Space Development Agency, known as NASDA, was established as Japan's rough equivalent of NASA. NASDA has the responsibility for development of launch vehicles and applications satellites.

In 1969, the United States and Japan agreed to cooperate in space. Under this agreement, American industry could provide Japan with technology and equipment for the development of launch vehicles and satellites. This technology could only be used

for peaceful purposes, and Japan could not transfer that technology, or anything developed using that technology, to a third country without the approval of the United States. As Japan developed larger launch vehicles, the agreement was modified in 1976 and 1980.

In the 1980's, Japan decided that aerospace was to be one of the key industries of the future and, therefore, it had to develop an "autonomous" or independent capability in space. To quote from a 1983 Japanese report.

> The introduction of technology and equipment hampers Japan with various restraints, rendering it impossible to undertake space activities independently * * * Independent development of technology is essential to securing autonomy in space activities.

The current launch vehicle under development in Japan, the H-2, is a product of that decision. Unlike earlier launch vehicles which were versions of American rockets and unlike the H-2's immediate predecessor, the H-1, which was a hybrid with one part American technology and one part Japanese technology, the H-2 is a purely indigenous launch vehicle. That means Japan can use the H-2 in any way it wants—the restrictions placed on earlier Japanese by our bilateral Space Cooperation Agreement don't apply. The implications of this, of course, is one of my worries, and we will discuss it in today's second panel.

I have a statement that Senator Burns would like to have included in the record at this point.

[The statement follows:]

OPENING STATEMENT BY SENATOR BURNS

One of our national goals has to be the reduction of our enormous trade deficit with Japan. From 1982 to 1988, our trade imbalance with Japan grew from $17 billion to $52 billion. In semiconductors, steel, and electronics, the Japanese have taken away market leadership from the United States and other countries. Japan now is taking aim at developing the technology to carve out a market in the satellite and launch service industries. Since the aerospace industry provides the United States with a trade surplus of $17.8 billion surplus, the most of any industry, we cannot afford to ignore Japan's competitive challenge in this area.

In the satellite arena, we competitively market satellite technology and ground systems that are the envy of the world. Despite our technological superiority, American companies have had a tough time penetrating the Japanese market. This might be tolerable where we are losing market opportunities to Japanese companies because they are offering more sophisticated, or less expensive, satellite systems. However, the recent Super 301 designation by the United States Trade Representative suggests that our difficulty in penetrating the Japanese market may have more to do with unfair trade practices in that country. Japan apparently has maintained a policy of prohibiting its governmental agencies from purchasing foreign-made satellites. This policy has effectively denied the American satellite companies a fair opportunity to sell to a significant share of the Japanese market from the outset at a time when America is the number one importer of Japanese goods and services.

Mr. Chairman, I welcome this hearing as an chance to investigate this discriminatory policy and to determine whether Japan pursues any other trade practices and policies that have the effect—intended or not—of excluding American companies from the Japanese satellite market.

This hearing also provides us with a chance to take a hard look at Japanese efforts to compete in the commercial launch market. Europe, China, and several other launching countries aggressively compete commercially to launch satellites and other payloads on a worldwide basis. Even Australia has entered the competition with its plans for a launch facility employing Soviet launch vehicles. Japan's entry into the field is going to make it even more difficult for the United States to maintain a foothold in the market. The Japanese have repeatedly demonstrated their ability to dominate new markets in a short period of time. If we wish to play a part

in what is sure to be a rapid growth industry of enormous potential, we must keep an eye on Japan as a future competitor in the international launch market.

Mr. Chairman, I am eager to hear what our distinguished witnesses can tell us today on these important trade matters.

Senator ROCKEFELLER. Now, let us turn to our two distinguished panelists, Ambassador Williams, Secretary Farren. I will be delighted to hear from you, Linn, if you wish to start.

STATEMENT OF S. LINN WILLIAMS, DEPUTY U.S. TRADE REPRESENTATIVE

Mr. WILLIAMS. Thank you, Senator.

We have prepared written testimony which we shall submit for the record, and I shall not read that testimony. I shall, however, make some introductory comments, if I may.

We know, Senator, you are particularly interested in areas of high technology. We are also, and we have found satellites to be an area of growing and special concern for us in large part because of the importance of high tech products to the U.S. economy, their future growth potential and technological spin-offs into other areas.

As you indicated, satellites were one of the three priority practices singled out under the Super 301 exercise last May.

There were basically two reasons for this, and both of them are important as metaphors for our trade concerns with many countries, but particularly with Japan.

The first reason for singling out satellites is exclusionary practices. We allow market forces to work in this country. That has worked often to the advantage of the Japanese companies.

The market is not allowed to work in Japan in the area of satellites. There is an explicit prohibition against procurement by Japanese Government agencies of foreign satellites where that procurement would interfere with indigenous development objectives, and that restriction applies across the broad range of all satellites.

Japan, as you have pointed out, has a comparative advantage in many high tech areas. The United States also has a comparative advantage in many high tech areas including satellites.

Officials at NTT recently acknowledged that comparable commercial satellites are available from the United States at roughly half the cost of satellites developed in Japan that they are required to buy.

Recently when a Japanese-built satellite of NHK failed, NHK needed a quick substitute. NHK bought an off-the-shelf satellite from a United States company at something like one-third the cost of a single Japanese-built satellite.

Yet, NHK officials recently informed the U.S. embassy in Tokyo that they would be reluctant to make similar purchases in the future because of government pressure to support the local Japanese industry.

Senator ROCKEFELLER. Was that company General Electric?

Mr. WILLIAMS. That is correct.

Two Japanese private firms that have been recently allowed to compete with NTT have entirely bought United States equipment. Therefore, if one takes those consortia as the Japanese private

market, one can say that United States satellites comprise 100 percent of the private market for satellites in Japan.

This is not including, of course, NHK and NTT where the government restrictions apply.

This is clear evidence to us that, where market forces are allowed to work, even in a country where "buy Japanese" thinking pervades the procurement practice, United States products are clearly superior in the satellite area.

Exclusionary business practices can have a number of origins. The origin of this particular practice in satellites is a stated intention by the Japanese Government to develop an indigenous satellite industry, announced by the government officially in 1983.

The prohibition on procurement of foreign satellites applies to the entire range of satellites, broadcast, communications, earth resource and weather.

The Japanese have bought components from United States companies where they have been unable to make or procure the components in Japan.

Ten years ago United States content in Japanese communications satellites was almost 80 percent. Five years ago United States content in Japanese broadcast satellites was 70 percent.

Because of Japanese policies United States content has been drastically reduced.

U.S. content in communications satellites has gone from 80 percent to 20 percent in only 10 years.

U.S. content in broadcast satellites has gone from 70 to 20 percent in only five years.

This is not, I repeat, a response to the market. These are not better Japanese components. They are just Japanese components.

One recent example that has come to our attention involves a satellite called the CS-4. NTT will apparently be required to buy a Japanese communications satellite called the CS-4 at roughly two times the cost of what it could buy a comparable satellite for in the United States.

The Government of Japan will pay 20 percent of the cost of that satellite. NTT will be required to pay the rest.

That means NTT is, in effect, required to pay for a development program of the Japanese Government.

Moreover, that satellite will not be ready until 1995, whereas U.S. technology is available now.

We have been advised that the Japanese Government says that the CS-4 satellite is really a research and development satellite, but to that we have at least two responses. First, why should NTT have to pay for R&D by the Japanese Government. Secondly, the CS-4 is obviously a commercial satellite, developed with commercial capacity and intended to be used for paying customers.

A third consortium in addition to the two I mentioned before has applied for a license to put up a telecommunications satellite in Japan, which would also compete with NTT. That request was denied. We believe the Japanese Government intends to force users to use the CS-4 satellite when it is launched.

The real reason for the development of the CS-4 in our judgment is to force indigenous development of Japanese satellite technology at the expense of United States suppliers.

The Japanese Government defends this policy by what we know as the "infant industry" argument. Japan needs to protect its industry from foreign competition, that argument goes, because that industry cannot compete directly on the market bases of quality, price, delivery and service.

This is an argument consistently made by developing countries. It may never be a very good argument, but it is particularly unsuitable for Japan. Not only is Japan very far from being a developing country, but Japan has benefitted greatly from the fact that other countries, primarily the United States, have not protected their infant high tech industries in which Japanese firms have been so successful here and elsewhere.

There is a second reason for our designation of satellites as a high priority trade practice, and that is the Japanese Government's practice of targeting.

The Japanese Government has targeted a number of areas, particularly high tech areas for development. When that has occurred, it has usually been successful, and the result has been, first, the absorption of foreign technology, then the growth of a domestic industry by protection against foreign competition, and finally an aggressive export industry.

This is not something we are making up. It is a stated policy of MITI or other government agencies, and it is a stated policy in satellites.

We have heard people ask, is the United States concerned that United States companies might not be able to compete against Japanese companies in satellites. Our answer is no.

We have no complaints with comparative advantage, except where the advantage is the Government. We happen to be better at this particular high tech industry of satellites, and we believe strongly that it is inappropriate for Japan to distort its domestic market in that industry at our expense.

In this area of satellites, as in other aspects of trade policy with Japan and other countries, we follow our primary trade policy of opening markets.

We seek fair and open competition in choosing suppliers. That benefits us, but it also in our view benefits Japan.

Indeed, the public press in Japan has reported that the Japanese Ministry of Finance has publicly questioned why the CS–4 should be developed at all.

The outcome of this process we hope will be a competitive environment in Japan.

Thank you, Mr. Chairman.

[The statement follows:]

TESTIMONY OF

DEPUTY U.S. TRADE REPRESENTATIVE S. LINN WILLIAMS

BEFORE THE

SENATE COMMITTEE ON COMMERCE

SUBCOMMITTEE ON FOREIGN COMMERCE AND TOURISM

OCTOBER 4, 1989

We appreciate the opportunity to speak today on Japanese satellite practices and their potential impact on our trade relations with Japan. Satellites were singled out as a priority practice when the Administration identified Japan under the "Super 301" provisions of the Omnibus Trade and Competitiveness Act of 1988. We selected satellites, along with supercomputers and forest products, in the belief that the elimination of Japan's practices in these areas would have the potential to increase U.S. exports significantly, both directly and by setting a precedent.

The policy of the Japanese government with regard to satellites and associated launch services has been and remains to foster the indigenous development of Japanese technology and industry. This objective was formalized in 1983 when the government published a White Paper entitled "Long Range Vision For Space Development," which stressed the need for Japan to pursue an independent course, unrestrained by reliance on foreign equipment and technology. Japanese policy includes a prohibition against the procurement of foreign satellites by Japanese government agencies when such purchases interfere with indigenous development objectives. This prohibition applies to the entire range of satellites -- broadcast, communications, earth resource, and weather.

American firms currently have some access to the Japanese government market, in that they serve as subcontractors of components and technology to Japanese prime contractors. While this arrangement has been mutually beneficial, U.S. firms are capable of playing a greater role in this market. The Japanese government appears determined to phase down foreign content, and perhaps to eliminate it altogether. Recent data collected by NASDA, Japan's National Space Development Agency, indicate that domestic content is increasing sharply in satellites procured by Japanese government entities. Japanese content in communications satellites has increased from 24% in 1977 to 80% in 1988; in broadcast satellites, it has jumped from 30% in 1984 to an anticipated level of over 80% by 1990.

The Japanese government has proved determined to foster an autonomous industry, notwithstanding the high costs of doing so. According to the Keidanren (Japan's Federation of Economic Organizations), the satellite industry will not provide positive returns on investment for years. Officials from NTT recently acknowledged that comparable commercial satellites are available at half the cost of the CS-3 satellites developed for their use by NASDA over a seven-year period. They noted further that, because of the high costs, Japanese development of components and satellite bodies would not be feasible without Japanese government involvement. Japan's Space Development Policy Guidelines state that "Japan does not require that everything connected with its space activities be of domestic origin but that Japan should be able to provide for itself at least the major parts of space activity systems, including design technology for major systems, manufacturing technologies, and control/operations software."

An interesting illustration of Japan's effort to pursue national self-sufficiency at considerable expense involves NHK, Japan's quasi-public broadcast corporation. Last year NHK urgently required a back-up satellite after the failure of one of the two operational satellites developed for it by NASDA. It took the unusual step of purchasing an off-the-shelf satellite from General Electric, one of the major players in the U.S. satellite industry. The two satellites were developed by NASDA at a cost of approximately 60 billion yen; the estimated cost of GE's off-the-shelf product was only 11 billion yen (approximately $88 million). Despite this considerable cost reduction, NHK officials recently informed U.S. embassy officials in Tokyo that they were unsure whether they would make similar off-the-shelf purchases in the future, because of pressure to support the Japanese industry.

The Japanese government's defense of these practices amounts to "infant industry" protection. While such a policy is sometimes considered appropriate for less developed countries, Japan is obviously not in that category. Given its status as an advanced industrial nation and indeed a global economic power, a policy of indigenous development is clearly inconsistent with Japan's economic position in the world. Rather than limiting access to its domestic market, it is our view that Japan should share responsibility for the maintenance of an open world economy that has served it well during the postwar era. Japan cannot expect an open U.S. market for products where its firms have a comparative advantage if they deny access to products, such as satellites, where U.S. firms have a clear advantage.

Japan has a history of selecting certain industries as key to the development of the national economy. Its strategy has been to protect the home market as a sanctuary by minimizing imports, discouraging wholly-owned, foreign direct investment,

and promoting the acquisition by Japanese firms of advanced foreign, especially U.S., technology. Foreign firms that seek market access and are granted it have been expected to transfer technology to Japanese firms. Close cooperation between government and business, the development of a national program or "vision" for the industry, government funds for research and development, and in some instances the provision of anti-trust exemptions are also essential components of the strategy. The overarching objective has been the development of a domestic manufacturing base, followed by the emergence of Japanese firms into world markets. We have witnessed this pattern in various industries, including semiconductors, computers and fiber optics, and are concerned that a similar logic informs Japanese policy in satellites and space development.

The Japanese government is well aware of our concerns in this area. In response to a U.S. request to explain Japan's satellite policy, the Foreign Minister of Japan confirmed in an October 1983 letter to the U.S. Trade Representative that Japanese policy was to ensure the autonomy of Japan's satellite development, as stated in the above-mentioned White Paper. The Deputy U.S. Trade Representative responded in protest, expressing the serious reservations of the U.S. government regarding that policy. The only subsequent policy change was a clarification that private Japanese companies could purchase imported satellites, but government entities could not if such purchases "interfered with" indigenous development objectives.

Evidence of America's competitive advantage is that, despite a clear preference to "buy Japanese," U.S. firms recently have made good progress in Japan's private sector satellite market. Hughes Aircraft has sold two communications satellites, worth over $400 million, to JCSAT, a recently formed joint venture between Hughes, Mitsui and C. Itoh that is permitted to compete domestically with NTT. Ford Aerospace is delivering two satellites to SCC, another company licensed to compete with NTT. NHK's purchase of a broadcast satellite from GE to back up the BS system has already been noted.

We welcome these developments in the private sector and expect the close cooperation between U.S. and recently licensed Japanese firms to continue. At the same time, we are still concerned that barriers to market access in Japan remain. The policy of autonomous development, the substitution of domestic for foreign content, and the explicit prohibition on sales of foreign satellites to the public sector constitute the most pressing problems. Moreover, despite NTT's privatization in 1985, the prohibition against foreign satellite purchases by government entities continues to be applied in practice to NTT procurement. The removal of that overt or invisible restriction is viewed as important by the U.S. government; NTT should be

allowed and encouraged to purchase satellites on a cost-effective basis in international markets, and should do so.

These barriers deny U.S. firms immediate access to existing markets they are well-prepared to serve. Aerospace is a critical high technology sector in which U.S. firms continue to enjoy a comparative advantage in international competition. It is also a sector likely to experience significant growth in aggregate demand in the future.

In addition to the protest lodged by the Deputy U.S. Trade Representative, we raised this issue several times in the context of the U.S.-Japan Trade Committee, and also in the MOSS (Market Oriented Sector Specific) electronics talks. Our lack of significant progress in persuading Japan to open its satellite market fully to international competition led us to utilize the provisions of the Omnibus Trade and Competitiveness Act. Section 301 makes actionable any case where the policy or practice of a foreign country is unjustifiable, unreasonable or discriminatory and burdens or restricts U.S. commerce. Exclusionary government procurement of the kind found in the Japanese satellite sector is one such policy. For this reason, along with our broader concerns regarding Japanese targeting, we identified satellites as a priority practice.

In identifying satellite practices, we seek to have the Japanese government reconsider its policy of indigenous development, and to facilitate greater market access in Japan for foreign producers of satellites. We also seek the removal of the Japanese government's policy of restricting purchases of foreign satellites by Japanese public entities, and acceptance by the Japanese government of the principle of fair and open competition in choosing suppliers, without reference to national origin. In our view, the outcome of this process should be a competitive environment in the satellite market in Japan.

Senator ROCKEFELLER. Thank you very much. Mike.

STATEMENT OF J. MICHAEL FARREN, UNDER SECRETARY FOR INTERNATIONAL TRADE, DEPARTMENT OF COMMERCE

Mr. FARREN. Thank you. I am pleased to be here today. I have prepared testimony, Mr. Chairman, which I will summarize.

Sir, I think you did an excellent job of outlining the history of the Japanese satellite program and a policy which in 1978 Japan established that was specifically designed to develop indigenous capability in space applications, specifically in satellites.

This policy calls for maximum use of Japanese technology and equipment by Japanese Government agencies and prohibits the purchase of complete foreign satellites. This policy was reaffirmed in July of 1983, with Japan's publication of its "Vision for Space Development."

This is the policy that was cited by the Office of the U.S. Trade Representative in the Super 301 decision this spring. The policy is a clear, unambiguous documented barrier to the Japanese market.

Japan's satellite policy represents yet another classic case of industry targeting by the Japanese Government. We have seen other United States industries, notably supercomputers, semiconductors, machine tools, to name just a few, that have been challenged by Japanese firms operating within the protection of the Japanese Government and a protected domestic home market. This is certainly the case for satellites, as we look at the facts.

The Japanese Government does not procure satellites to meet its needs, but develops satellites. All government satellite procurement must be channeled through a single agency, the National Space Development Agency of Japan, then it chooses Japanese contractors to build satellites for a particular agency.

This process allows the Japanese Government to accomplish several goals at once. First, it can coordinate the actions of several domestic firms in ways which lower costs to the firm and ensure maximum diffusion of technology.

Secondly, by totally controlling market access it can exercise maximum leverage of potential foreign suppliers of technology. Although United States firms may derive short-term benefit from their arrangement with the Japanese, the share of United States components in Japanese satellites has dropped steadily as Japanese companies develop their own technological capabilities.

Figure 1 on this chart indicates the change in percentage of Japanese content of Japanese-developed satellites. We have copies of the chart, as well, Mr. Chairman, to pass around. In fact, it is so stark a change in percentages, going back from 1975 through 1990, the chart almost becomes somewhat difficult to read, everything is clearly moving from the figures which you stated of about 20 percent up to as much as 90 percent in Japanese content.

So the Japanese satellites are not only an industry unto itself, but a window to the whole space industry for the 21st century. NASA has noted that a single, $100 million launch contract is equivalent in economic terms to the import of 10,000 Toyotas.

NASA also has published a report linking space technology spinoffs to 46 various industrial and commercial applications ranging from medicine, to composites, to the environment. The Japan Ministry of International Trade and Industry has its own version of this report, stressing that growth in aerospace leads to growth in other industry areas. MITI's space industry tree branches out into automotive, energy and electronics industries, among others.

Japan's satellite government procurement policy is clear and unambiguous. Its market is closed, and its long-term intention is the development of a broad, aerospace industry within Japan through specific government policies and a protected home market.

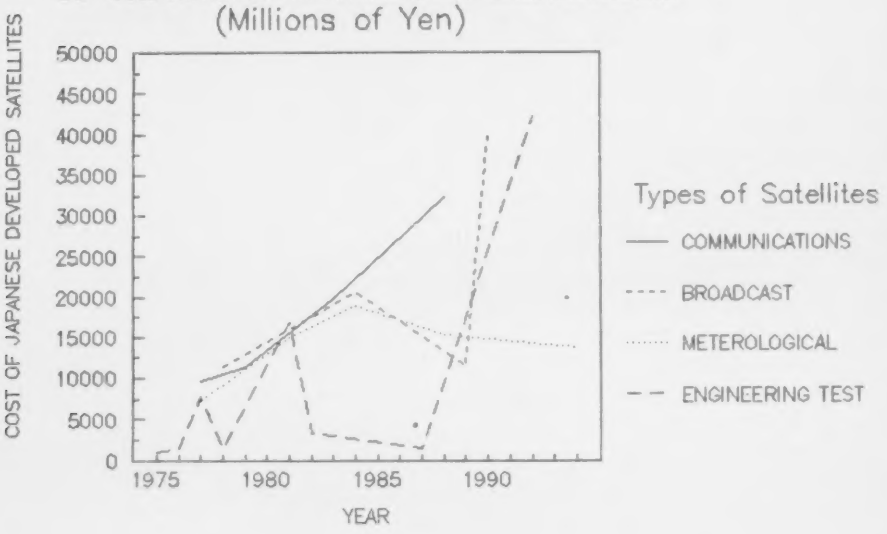
Even where the technology which the Japanese have derived from foreign sources is available at a lower cost, they nevertheless move towards domestic sourcing of technology and that cost goes up dramatically.

The second chart which we have illustrates that the change in cost of Japanese-developed satellites goes up, oddly enough, as they attempt to incorporate domestic technology. It does not go down, as you would expect if they were following normal economic judgments in terms of the economic development of the satellites themselves.

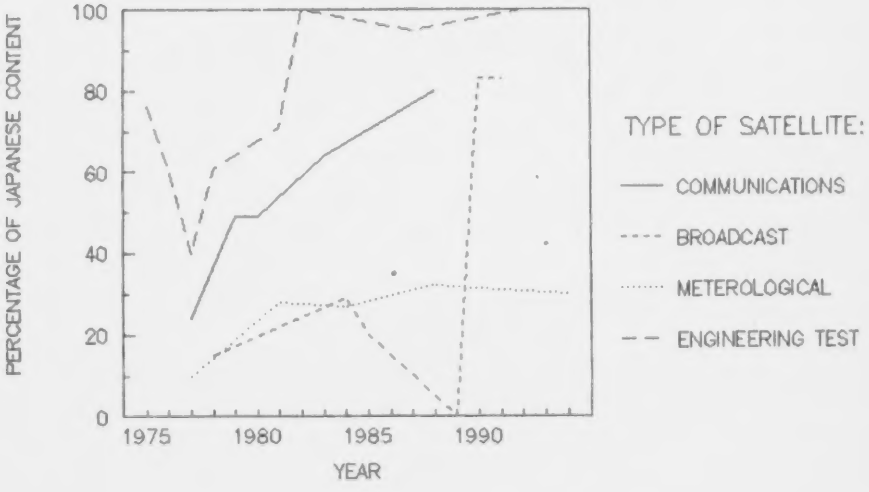
[The charts follow:]

CHANGE IN COST OF JAPANESE DEVELOPED SATELLITES

(Millions of Yen)



CHANGE IN PERCENTAGE OF JAPANESE CONTENT OF JAPANESE DEVELOPED SATELLITES



Mr. FARREN. We have to ask ourselves some deep questions when looking at the Japanese policy and when we try to fathom some of the economic reasons for them pursuing a policy that they do.

First, when the Japanese have a $90 billion trade surplus and have committed themselves in numerous summits and bilateral talks to reducing their surplus and buying the best available product at the best prices, why do they continue to support an indigenous satellite development policy, especially when high quality, less expensive satellites can be purchased outright from other sources?

Why does Japan allocate significant resources to satellite development when its domestic market is so small? Why are United States re-export controls on United States-origin technology a problem for Japan?

The answers are found in the clear vision of a world class, export-oriented Japanese satellite and launch industry at the center of a telecommunications, information aerospace composite which will carry Japanese industry into the 21st Century.

Clearly, they have a long-term vision for their industry and are willing to turn away from commercially viable means of acquiring that same technology and satellite requirements from U.S. industry and rather bear significantly higher cost as a means of investing in this long-term vision, very much as Ambassador Williams pointed out, a policy that can be described as infant industry protection, certainly a policy not suited to an economy that is developed to the extent of the Japanese economy.

Mr. Chairman, I can assure you that the Commerce Department intends to work closely with other government agencies, particularly USTR, in focusing on this problem. We are also committed to finding a satisfactory resolution for U.S. industry through the Super 301 negotiations now underway.

Thank you.

[The statement follows:]

STATEMENT OF J. MICHAEL FARREN, UNDER SECRETARY FOR INTERNATIONAL TRADE, DEPARTMENT OF COMMERCE

Mr. Chairman, it is with great pleasure that I appear before your subcommittee today to discuss Japan's satellite development program and the Super 301 case on satellites with Japan.

In 1978 Japan established a policy of developing an indigenous capability in space applications, particularly satellites. This policy calls for maximum utilization of Japanese technology and equpment by Japanese Government agencies and prohibits the purchase of complete foreign satellites.

This policy was reaffirmed in July 1983 with Japan's publication of its "Vision For Space Development". This paper noted the additional cost of domestic satellite development but nonetheless recommended development of an indigenous industrial capacity with the ability to serve export markets. This is the policy that was cited by the Office of the U.S. Trade Representative in its Super 301 decision, which identified trade barriers, trade distorting practices and priority countries.

This policy is a clear, unambiguous, documented barrier to the Japanese market. Japan defends this policy on national security and public safety grounds. But those rationalizations do not hold up to scrutiny. During this testimony I will outline the economic and commercial implications of Japan's satellite policy, and the reasons why this Super 301 case is so important.

Japan's satellite policy represents yet another classic case of industry targeting by the Japanese Government. We've seen other U.S. industries—supercomputers, semiconductors, and machine tools, to name just a few—challenged by Japanese firms that have been coddled and protected in their homemarket by the Japanese Govern-

ment. Under the guidance and encouragement of the Japanese Government, and with the benefit of a protected home base, these industries are able to develop technology and refine their products, building war chests of financial as well as technological capabilities before setting out to compete in global markets.

This is the case for satellites as well. The Japanese Government does not "procure" satellites to meet its needs, it "develops" satellites. The various Japanese Government agencies which are the end users of satellites are not permitted to simply select the satellites that best fit their requirements. Rather, all government satellite procurement must be channelled through a single agency—NASDA [National Space Development Agency of Japan]—that chooses the Japanese contractors to build satellites for a particular agency. American subcontractors are then chosen to provide only those technologies that Japanese companies do not possess.

This process allows the Japanese Government to accomplish several goals at once:

It can coordinate the actions of several domestic firms, in ways which lower cost and ensure maximum diffusion of technology.

By totally controlling market access, it can exercise maximum leverage over potential foreign suppliers of technology.

Although U.S. firms may derive short term benefit from their arrangements with the Japanese, the share of United States components in Japanese satellites has dropped steadily as Japanese companies develop their own technological capabilities. The trend is clear—when U.S. technology is no longer needed, U.S. participation will be phased out.

I don't think I need to remind this subcommittee of the successes of other Japanese targeting programs. The United States is the world's technological leader in satellite and space technology, but the Japanese are undoubtedly capable of narrowing the gap quickly. They have made advances in space technology and satellites that would have been unexpected a few years ago. And they will almost certainly continue to do so.

To the Japanese, satellites are not only an industry unto itself but a window on the whole space industry for the 21st century. Japan is emerging as a key participant in the global aerospace industry, a result of deliberate decisions aimed at establishing a world-class Japanese aerospace industry.

Japan is looking to aerospace as a source for its future growth and prosperity. It will provide an evolution beyond dependency on consumer electronics, automobiles, and other industries now subject to intense competition from Korea and other nations. Growth in aerospace is critical to Japan's future.

Our National Aeronautics and Space Administration has pointed out in a recent report that space is a new economic frontier, and that space commerce is directly linked to American competitiveness in the global market. NASA has noted that "a single $100 million launch contract is equivalent in economic terms to the import of 10,000 Toyotas." NASA has published a report linking space technology spinoffs to 46 various industrial and commercial applications ranging from medicine to composites to the environment. The Japan Ministry of International Trade and Industry has its own version of this report, stressing that growth in aerospace leads to growth in other industry areas. MITI's "space industry tree" branches out into the automotive, energy, and electronics industries, among others.

Japanese satellite government procurement policy is clear and unambiguous—its market is closed. During recent discussions with Officials of the Science and Technology Agency and the Ministry of Posts and Telecommunications, Japanese representatives again made it clear that areas of space technology designated for domestic development would not be open to imports—even where that technology is already available, at lower cost, from foreign sources. This Super 301 investigation thus appears to be an open and shut case. Because of its simplicity, we have to ask ourselves some deeper questions when looking at this Japanese policy:

First, when the Japanese have a 90 billion dollar trade surplus and have committed themselves in numerous summits and bilateral talks to reducing their surplus and buying the best available products at the best prices, why do they continue to support an indigenous satellite development policy, especially when high quality, less expensive satellites can be purchased outright from other sources?

Why does Japan allocate significant resources to satellite development when its domestic market is so small?

Why are United States reexport controls on United States-origin technology a problem for Japan?

The answers are found in the clear "vision" of a world class, export-oriented Japanese satellite and launch industry, at the center of a telecommunications-information-aerospace composite which will carry Japanese industry into the 21st century.

As we approach this case, then we must look beyond the simple issue of the unfairness of Japan's government satellite procurement policy, to the underlying commercial rationale—and we must make sure that the Super 301 process addresses not only this single facet but the whole panoply of Japanese instruments for denying United States companies the legitimate returns on their leadership in space commercialization.

Let me assure you, Mr. Chairman and members of the subcommittee, that the Department of Commerce is committed to dealing effectively with these and other tough issues that face America in the global market place. Thank you for allowing me to speak before you today. I will be pleased to answer any questions which members of the subcommittee may have.

Senator ROCKEFELLER. If everybody in government were like the two of you, I would not worry, and I thank you for your testimony. I will just ask a series of questions of either or both of you, and you can trade off as you wish.

Does the United States itself impose any restrictions on foreign companies bidding on our government's civilian programs for satellites?

Mr. WILLIAMS. Senator, we checked on that in the course of our research on satellites. NASA informs us that there are no impediments to bidding on U.S. Government-procured satellites by foreign firms. While foreign firms have not bid on whole satellites, a British firm did bid on satellite components.

The Department of Defense tells us that it also has no written or stated policy of prohibiting foreign bidding on foreign satellites. There are occasions where, if classified information is required for military applications, procurement is restricted, but that is the only situation in which there is any restriction at all on procurement in this country.

Senator ROCKEFELLER. Did you want to comment, Mike?

Mr. FARREN. I agree with that totally.

Senator ROCKEFELLER. Do you think that the United States made a mistake, in fact, in 1969, in agreeing to provide Japan with satellite technology? What lessons can we draw from this experience? Would Japan have decided to go its own way in space without cooperation from us? Would they be stronger now, as a competitor, or weaker, or what?

Mr. FARREN. Mr. Chairman, that is a difficult question to answer. Do I think we made a mistake to attempt to cooperate with the Japanese in the development of satellites? I think cooperation can be a very healthy means of spurring industries in both countries, and it can be very helpful to both nations.

I think, frankly, that some of the technology transfer that has taken place not only in satellites but in other industries, has not looked forward enough in terms of the commercial implications of the nature of that cooperation.

I think, frankly, some technology has been transferred from the United States at a cost that in no way reflects the investment or its long-term economic value to the United States, and I think as technology is transferred we have to have a clear understanding that market forces are operating and commercial factors will be taken into account when that technology is utilized or made available in either nation.

To that extent, I think the policy of Japan certainly is one that could have been focused on much sooner, perhaps should have been

taken into account by U.S. industry as the technology transferred occurred, and is certainly an example of what we should not do in other industries.

Mr. WILLIAMS. I agree, Senator. I think it is probably unlikely that Japan would have abandoned its space development program, and I suppose we also have to remember that the situation 20 years ago was a bit different.

There was a policy of ensuring that satellite development took place in a nonmilitary way, and I think the 1969 policy had that as part of its focus, but, as Under Secretary Farren says, the policy 20 years later is and must be quite different because Japanese policy itself has taken a different turn.

Senator ROCKEFELLER. To follow up on your point, Mike, Jim Abegglen and a number of others raise an interesting point.

All of us in this room have enormous respect for what the Japanese have accomplished. In the earliest written edition of Rischauer's text on the United States and Japan, so to speak, the "biblical" text, he predicted back in 1950 that Japan would not make it economically. I think that has been deleted in the more recent edition.

I have a deep respect for Japan's education system, for their vision in the long-term approach of investors, their general societal discipline and integration.

But one can also say that, since 1955 for the cost of about $17 billion, Japan has purchased virtually all of the technology worth having.

Or, to put it a different way, we as a country, primarily in the private sector, have chosen to sell to Japan our technology. There has been a remarkable lack of attention on the part of the public and the private sector to what we were doing to ourselves and for Japan. Would you gentlemen agree with that?

Mr. FARREN. Yes.

Mr. WILLIAMS. Yes.

Senator ROCKEFELLER. Perhaps you could elaborate a bit.

Mr. WILLIAMS. In the case of satellites, there is another element to it too, Senator. What we are talking about in satellites really has nothing to do with market forces. It is entirely a government-directed effort to put Japan in a particular position at a particular time, but not related to any kind of supply or demand or economic approach that one can identify.

Senator ROCKEFELLER. So you have a very different type of government involvement. It is, I think, a remarkable story of the industrial development.

Senator Stevens of Alaska, who is distinguished in whatever he talks about and in whatever committee room he sits, has arrived, and if you have any opening comments, Senator, we would welcome them.

Senator STEVENS. No, thank you very much.

Senator ROCKEFELLER. Did I sum it up about right?

Mr. FARREN. Mr. Chairman, if I could comment on your last question, a number of factors have gone into the transfer of technology as we viewed it from the Commerce Department's perspective, and particularly as we have talked to a number of firms and

industries in recent months in preparation for the structural impediments initiative talks.

One, the transfer of technology was more or less a price for access to the Japanese market. Also, American firms in pricing their technology really viewed it as a very easy windfall of profit without really going back and attempting to price it out in terms of its true value as I mentioned, particularly in terms of its long-term commercial cost for that firm or industry.

Senator ROCKEFELLER. Combined with the assumption that, somehow, even though they were making these transfers, it ultimately would not damage us because, ultimately, we could not lose.

Mr. FARREN. Exactly, that it was cost-free in that sense, in the larger sense of it. Frankly, when you look back to the early 1960's and the Japanese per capita income was one quarter that of the United States and a firm like IBM, which was a dominant power in the world in terms of computers, in that entire industry, when they were basically compelled to transfer technology for the price of continuing to operate within the Japanese market, undoubtedly executives in that company at the time did not view that as that threatening or onerous an obligation.

Yet that technology served as the basis of what is now challenging the entire United States computer industry in terms of what has built up in the last 30 years through any number of firms in Japan utilizing that technology, from a protected home market with government policies supporting their efforts to make inroads in our own markets throughout the world.

Senator ROCKEFELLER. How would you explain, either of you, this extraordinary naivete on the part of our own private sector—that so many people and companies, for so many years, for reasons involving short-term gains, or the requirement of an influx of capital in order to survive, allowed this massive transfer of technology? Has this ever happened anywhere else before?

Why is it that we have done this? How do you measure its impact?

Mr. WILLIAMS. There are at least speculations in studies of 19th century and early 20th century England that similar kinds of transfers occurred, although for different reasons. Those appear to be much more related to markets.

I think part of it is a function of perhaps too much focusing on the short term here in this country, and also too much focusing on the domestic market.

I think Mr. Farren indicated that in the 1960's and 1970's, one really had to try very hard to find a U.S. company that gave very serious attention to a global market. It was during that period of time, particularly the 1970's, when not only Japanese companies but European companies were gearing up for a worldwide global market.

The market here was forgiving. It was large. It could, at that time, absorb imports without significant pain. And many American companies did not, in their own planning, think in terms of either a global economy or exports.

I think one also has to point out again, though, as I mentioned before on satellites that in the case of Japan and other countries, but particularly Japan, the choice was not a voluntary one. Had

United States companies the option of selling their products in Japan, they would undoubtedly have chosen to do that. What they were required to do, by and large, instead, was to transfer their technology.

They saw Japan as an important market that could be tapped by a joint venture, rather than by exports. Yes, it was shortsighted, on hindsight, but the choice American companies had was different. They did not have the option of exporting.

Mr. Farren mentioned computers; automobiles is another example. United States automobiles had a very substantial percentage of the Japanese market. The Japanese market closed. It later opened, but the damage had been done. The technology had been transferred, the industries had been built up and protected. And the task of opening the Japanese market just gets harder by the year.

Senator ROCKEFELLER. We did not, if I am correct, have a global trade deficit until approximately the year 1980. But is it not true that our bilateral trade deficit with Japan goes back to 1962? That is when the first deficit, as between the two countries, occurred?

Mr. WILLIAMS. I am not sure it was 1962, Senator, but it was in the mid-1960s.

Senator ROCKEFELLER. In the mid-1960s, all right.

There is a movement in Japan now to make NHK, the national public broadcasting system, more private and less of a government agency than at present—similar change to what happened to NTT, the domestic phone company, several years ago.

If this were to occur, NHK, according to some sources, might have the need for increased direct broadcast satellite capabilities. Under the present rules, I assume that a so-called privatized NHK would be restricted, just as NTT is restricted today. Is this a correct assessment?

Mr. WILLIAMS. I would think it is, Senator. The procurement policies of a "privatized" NTT would unfortunately support the proposition that the procurement policies of NHK would not vary from those it is currently required to follow.

Senator ROCKEFELLER. Mike.

Mr. FARREN. Mr. Chairman, in June of 1989, the revision of the space policy guideline by the Japanese Government indicated that the satellite, BS-4, would be developed in the same manner as the prior satellites.

Now, that, I think, is a way of saying that the procurement will be handled in the same way, using NTT as an example.

Ambassador Williams pointed out the cost savings that can be enjoyed on satellites. When you talk to NTT officials privately, they will tell you they would very much like to be able to benefit from those cost savings. But, given their relationship with the Government of Japan, and their interest in continuing in their current positions, it is not likely they are going to go out and purchase an American satellite outside of the guidelines. I think NHK will be in the exact same position.

Senator ROCKEFELLER. We discussed my next question already, but I want to pin it down more. NHK recently bought a broadcast satellite directly from General Electric. I understand that the reason was that the most recent direct broadcast satellite launched by Japan is not functioning properly. So NHK had a desperate

need to fill the gap until its next-generation satellite, the BS–3, is launched.

Does this, gentlemen, in your judgement, represent any change in Japan's satellite procurement policy or would you call it just a one-time aberration because of a particular problem that Japan was experiencing at the present time?

Mr. FARREN. I would call it an aberration, Mr. Chairman.

Mr. WILLIAMS. I think the evidence is clear, Senator. In fact, NHK has been quoted in the press as saying, and our U.S. Embassy has, in its discussions with NHK, been told, that NHK would not be permitted to do that kind of procurement again. That was a one-term emergency process.

Mr. FARREN. Mr. Chairman, the policy is rigid, but it does not lack pragmatism. And when they need a satellite they are going to go out and buy it. But if they can avoid it at any means and accomplish their goal, they will.

Senator ROCKEFELLER. I have been watching Japan, in one way or another, for over 30 years, and I see a clear policy goal of self-sufficiency in all manufacturing areas. The satellite area certainly fits that description, and the result, in this Senator's view, is blatant protectionism.

Would you gentlemen comment on what I have just said?

Mr. WILLIAMS. We agree.

Senator STEVENS. Can I ask one question?

Is the chairman right that it is self-sufficiency or is it global supremacy?

Mr. WILLIAMS. The stated policy, Senator, is self-sufficiency. I think what Senator Rockefeller may be referring to is in connection with historical targeting practices in Japan. The flow of thinking has first been self-sufficiency by protecting a domestic market, followed by an aggressive export industry.

The policy itself, though, speaks only in terms of the development of an indigenous industry.

Senator STEVENS. May I have one other question?

Senator ROCKEFELLER. Of course.

Senator STEVENS. In the material I have reviewed, there is a limitation on the use of their launch sites in Japan because of local pressures, apparently from fishermen. Are you familiar with that?

Mr. WILLIAMS. I am not familiar with concerns about localized launch, although it would not surprise me. There have been difficulties locating airports in Japan because of concerns of local residents.

Senator STEVENS. Have they increased the number of their launches from their own territory in recent years?

Mr. FARREN. I honestly do not know, Senator. We will get back to you. I have to assume that they have.

What you mention is frankly something that rings a bell, but I cannot give you chapter and verse.

Senator ROCKEFELLER. I think they have a limit of four launches a year in Japan.

Senator STEVENS. Thank you.

Senator ROCKEFELLER. Thank you, Senator Stevens.

I would like to ask now a more general question about Japan's industrial policy. Japan has targeted the aerospace industry as one

of the key industries for the next century. I think that we can agree on this.

When one looks at the history of Japanese targeting, and this reflects a little bit of Senator Stevens' comment, there are many cases where the result has, in fact, been the domination of that sector worldwide by the Japanese industry, and often the disappearance of the incustry in the United States. I made reference to that in my opening comments.

When the U.S. Government tries to foster an industry, such as semiconductors through Sematech, or as might happen with high definition television, our goal is to help our own industry develop. We certainly do not expect, and, in fact, do not want, the industry in Japan or any other country to go under as a result of what we do.

How, given these conflicting sets of cultural and government policies, can we deal with this type of Japanese Government policy?

Mr. FARREN. Mr. Chairman, the approach that the administration is taking I think is ultimately the only answer, and that is to get the Japanese market open. It is the protected home market that has allowed them to essentially cross-subsidize the development in some of these key industries, and through a targeted external trade policy, move toward global domination.

I think there are clearly efforts, or at least policies under consideration, within the United States Congress and the administration to try to offset some of the government intervention within Japan.

Sematech I think is a worthwhile undertaking. Will it ultimately reverse the problems that the U.S. industry is confronting? No, not unless the Japanese market is opened up. And that is essentially the goal we are pursuing through the structural impediments initiative.

Until that happens, the Japanese will continue to be able to generate revenue domestically that they pour into long-term investment strategies, and will, in fact, by targeting specific product categories or industries, be able to gain overwhelming advantage over their competitors in the United States and Europe.

And by some means, we have to open up that market in order to curtail what they now very effectively use as a matter of economic policy, in large measure, through the efforts of their private sector.

Senator ROCKEFELLER. And one of the efforts that we as a government have taken on to open up those markets is, of course, the Super 301 process. There are those who feel that the process will come to naught because of the current political instability within Japan.

Would you wish to comment on that?

Mr. WILLIAMS. Yes, Senator. We are committed to the opening of markets worldwide, including the Japanese market.

To pick up a bit on what Under Secretary Farren said, the possible alternatives of restricting imports or having a large U.S. industrial policy, we do not consider attractive ones. The alternative that is worth pursuing from our standpoint, and the global standpoint, and Japan's standpoint, is opening the Japanese market.

We believe that we have used section 301 responsibly and reasonably. We believe that our market-opening exercise will help not

only our industry, but the global economy, and, in its own way, the Japanese consumer. We have no intention to withdraw from that effort.

All political systems have their ups and downs, and trade policy should not be relegated because of political concerns.

We have established that trade as a high-priority item. Evidence of that is, when Prime Minister Kaifu visited the President not too long ago, trade was at the very top of the agenda and, in fact, dominated a great part of that agenda, as you will recall.

Senator ROCKEFELLER. We are all in government here, so that we cannot answer for the private sector, but it is interesting to me that the satellite industry, in the press and in any other form that I know of, at the time that Super 301 was up for consideration by the Congress, was either silent or opposed to Super 301. Why do you suppose that to be the case?

Mr. WILLIAMS. We run into that frequently, Senator. I think that that is an understandable corporate and human unwillingness to jeopardize a current market, however important the future market may be.

Obviously, satellite companies have customers in Japan. We have discussed the market-opening exercise with them, but we respect their position.

At the same time, while we believe we are helping the interests of American industry, we are pursuing government policy. And it is an important policy of the government that the designation of satellites furthers.

One other point on the market discussion we had a bit earlier, Senator, in connection with the Japanese political situation. In the areas we have designated, the effects of open markets in Japan will be beneficial for the Japanese consumer.

Ultimately the Japanese consumer is going to pay for a more expensive, less efficient satellite. And, as was true in a number of areas, such as telecommunications in our recent discussions we have found developing in Japan and in the Japanese press a school of thought that supports the result we seek, if not the approved we use.

I think one has to keep in mind that, while they are not our primary focus of attention, we are, nonetheless, helping the interests of the average Japanese consumer.

Senator ROCKEFELLER. That is an interesting point, Linn. And I would be interested, as you are both students of the country, if it is blowing a groundswell.

We know there has been upheaval over the Recruit scandal, the consumption tax, et cetera, and there is a sense that the Japanese consumer, whether it be rice, or satellites, or anything in between, is beginning to wake up to the fact that they are being overcharged because of their government's policy.

It is not clear to me whether it is a movement which is fated to keep growing or whether it is a movement which will surface and make its head raise but, like the proverbial nail, then be pounded down and recede into the wood through traditional patterns.

I am curious as to your thoughts about that.

Mr. WILLIAMS. My sense is that it will continue to grow, as the Japanese public becomes more acquainted with prices in other countries.

There is a study underway on this subject that Under Secretary Farren and the Commerce Department are undertaking in connection with the structural impediments initiative.

As the Japanese public travels more (there are something like 10 million Japanese that travel a year) and as more Japanese live abroad and work abroad, they will realize that it is not that every other country is cheap, it is that Japan is expensive.

I believe that that recognition can only continue as knowledge increases.

The issue is whether it can be galvanized into something that has an effect on the political system. That is not a question limited to Japan.

In this country one finds a large, politically significant consumer movement, but even it is but very recent, and often unable to concentrate its attention on a broad range of subjects. It is the dilemma of a pluralistic government. Special interests are able to concentrate their concerns much more quickly and easily than broad interests.

In Japan it may be more difficult, still, for a variety of reasons, to develop a politically strong consumer movement.

Mr. FARREN. Mr. Chairman, it is an interesting concept that is foreign seemingly to Japanese commentators, the press and those who follow public opinion. They have a very difficult time nailing down how meaningful it is and what is going to happen as a result.

We spent about 2 weeks in Japan during the month of September, first of all, for the structural impediments initiative and then the Trade Committee. Then Secretary Mosbacher spent four days there meeting with cabinet officials and the prime minister.

It is something that we focus on through SII in the public statements, and it is something that Secretary Mosbacher really focused on in his speeches and public comments.

One, we were interested to find that the Japanese press gave us pretty balanced and fair coverage on the message. I was interested to find, though, that the Japanese press was somewhat cynical about the prospect. One, of course, they questioned our sincerity in talking about our concern for the Japanese consumer but also seemed somewhat cynical about the prospect of this really leading to meaningful policy changes.

I was encouraged by the fact that many of the Japanese political leaders really did seem to recognize that the consumer movement was something important to them as a political movement and a bellwether of where they start needed to moving policies.

It is interesting that Prime Minister Kaifu in his opening address to the Japanese Parliament the other day in fact talked about the Japanese consumer and the need to address the concerns of consumers particularly as it related to imports.

Now where that will lead I think is still very much up in the air. It is, I think, extremely important, though, for the United States to portray our policy and our interest very much in the context of what it means to the Japanese consumer. They are not going to change their policy simply because they believe there is some day

of reckoning down the road in terms of the United States-Japan trade relationship, at least not at this stage.

Hopefully they will change their policies because it makes absolute sense from the point of view of individual Japanese citizens. At some stage when the concept of individual consumer welfare is introduced in the Japanese economy in the context of pricing, distribution, availability of products and willingness to purchase foreign goods, then we will have made a gigantic leap in terms of the overall United States-Japan trade problem. I think anything we can do to further that along, we should.

Now, does it hold great prospect of changing policy? I think the jury is still out on that.

Senator ROCKEFELLER. That is so interesting.

Let me test a conflict in my own mind on this on you two gentlemen.

You are right. The consumer movement is growing. The press distinguished itself in its boldness once one newspaper set the pace on the Recruit scandal. That was extraordinary. Then one looks at the Mainichi poll and sees Ms. Doi and Mr. Hashimoto at twenty-four percent. 24 percent for Hashimoto is one thing, but for Doi that is really quite extraordinary.

The women's movement, the aging of Japan and the costs that come because of that, the enormous amount of money that Japan is going to be spending between now and the beginning of the next century on infrastructure, all of this will put pressure on the Japanese consumer and the Japanese budget. So it makes sense to me that there may be significant changes in a Japanese political and social system.

Then, on the other hand, a new generation of leadership is emerging which does not remember, or pay particular court to, the post-World War II era when the United States was, I think, quite generous, and rightfully so, in helping Japan get back on its feet. There is a school of thought that says that these leaders, in their late 1940's and early 1950's, will be much tougher customers than the previous leadership not that the present situation is not tough enough.

You understand the point I am trying to make—that the internal pressures and the generational change in Japan—will be significant. Mr. Morita's new book, "The Japan that Can Say No?" has caught on enormously in Japan, and reflects these changing attitudes.

I would be interested in your reaction. I do not wish to keep you here all day. It is just so interesting to me that I am apparently doing just that. I would be interested in your comments, however.

Mr. WILLIAMS. The coauthor was Mr. Ishihara. It is an interesting title because I can think of no country that has more ways to say "no" than Japan in many respects.

I understand the origins of the title and the reason the book has its significance in Japan. It is, I think, a fascinating book for Americans to read.

There is a conflict, I think, in Japan between traditional relationships and the growing importance of foreign relationships, particularly in business and economic areas. One is not quite sure where it will come out.

But what may come out of it is a much more mature relationship between the two countries, where both the United States and Japan recognize that Japan is a fully developed, full-fledged member of the world's political, economic and financial community and is entitled to the role and the importance that comes with that.

I think that is part of the focus of "The Japan That Can Say No". But that role also brings responsibilities. That is a large part of what we believe we are trying to get across in pursuing our policy of market opening. Opening markets in Japan does not have that much to do with the size of the deficit or even the existence of the deficit. We should be pursuing that policy even if we were running a $55 billion surplus.

Senator ROCKEFELLER. Even if as the markets opened up Taiwanese products flowed in instead of our own, it is the principle rather than the numbers.

Mr. WILLIAMS. That is correct. We should have no complaints with the market working fairly. If we lose for market reasons, we lose.

What we are looking for is the opportunity to compete in the world's second largest market where that market is really a part of the world's economy, not a market where price points are artificially higher virtually all across the board than they are worldwide.

Senator ROCKEFELLER. Mike

Mr. FARREN. Mr. Chairman, the question you raised I think reflects back on some of what I mentioned needs to be our tactic or approach. Those who have followed Japan will always assert that the means by which Japan reaches consensus is to respond to foreign pressure on issues that are typically on the table when we talk about trade.

I guess my point in terms of the need to sell our arguments in Japan more effectively is the fact that foreign pressure and what we want them to do is not going to carry the weight which it once did, and it is going to be that much more important for us to point out what is within their own best interest and the best interest of their individual citizens and consumers.

That is not to say that Japan has not done an excellent job of operating within their own best interest. They nevertheless have a decisionmaking system when it comes to international economic and trade policy that is very reliant on signals coming to them from the United States and other foreign sources.

I think as this new generation of leaders come into their own—and believe me, they are starting to—they will be much less responsive to admonitions coming from the United States and much more concerned with what makes sense domestically from the point of view of Japan itself.

Now that leads to a real dilemma——

Senator ROCKEFELLER. That is both good and bad, is it not, for our interest?

Mr. FARREN. Yes, that is true.

Maybe right now we are in that middle ground where we do not have the influence which we once did; but there also is not that internal driving force that hopefully might allow them to pursue some of the policies we would very much advocate.

Now I find the title interesting, too, because I think internally one of the biggest problems that Japan has is making decisions. I agree with Ambassador Williams that they have many ways of saying no, but usually the means they use is to say maybe or talk to us later. Very often, decisions are constantly put off.

Now the status quo tends to operate to their benefit, so that may be a wise tactic; but as they come into their own, they are frankly going to have to be able to offer an answer whether it is yes or no. Very often, the political apparatus is such that their explanation to us is we simply cannot get an answer, so you are simply going to have to wait.

Now that might be a tactic or it might be a reality; but either way, in some respects I would rather have them just tell us yes or no rather than constantly having them playing for more time and taking advantage of the status quo as it exists.

Mr. WILLIAMS. Part of what Under Secretary Farren and I are both saying, I think, is that a lot of the debate on what Japan will look like and the relationship between Japan and the rest of the world, including us, is occurring in Japan. It is not occurring necessarily in the debate that is going on between the United States and Japan.

One of those areas of debate in Japan is the role of foreign influence, the gaiatsu. The historical role of gaiatsu, foreign influence, has been debated in the English books printed in this country in English. I think it is now being debated among the Japanese as to what role it has played and should play.

Despite the fact that the relationship is maturing and the developments we have talked about, sophisticated observers, policymakers and politicians will privately say that Japan and in particular the Japanese Government often looks to foreign influence in order to make some hard domestic political choices

If that continues, and as the debate on gaiatsu continues, that puts both Japan and the United States in an awkward position because, on the one hand, foreign influence is becoming more criticized in Japan—look at "The Japan That Can Say No," the popularity of that book.

On the other hand, if foreign influence is still expected by the Japanese and by Japanese policymakers in order to make difficult political decisions which in other societies might be made by consumers for consumers, then the areas of confrontation are likely to get more shrill and more numerous.

We are obviously hoping for a different result. I think the maturing of the relationship to us means, we hope, a reduction in the shrillness and in the number of trade disputes. Once again, as with so many things, I think the jury is out.

Senator ROCKEFELLER. Thank you both. I have simply one more question and then a relatively short statement to which I am going to subject you both, and you can respond if you wish.

When one looks at the Japanese challenge in the satellite industry, for which we are here, or, in fact, in any industry, we have to look at the very different way in which companies there are organized.

We all know about the keiretsu. Those industrial groupings have a long and special noncompetitive relationship with each other

which has been very helpful to Japan and not very well understood in this country. This is an issue that will be discussed in the Structural Impediments Initiative with Japan.

Now my concern with commercial competition in space is that large integrated companies in Japan, as well as these keiretsu, may put together a comprehensive package. For example, Mitsubishi Electric decides to build a communications satellite. Mitsubishi Heavy Industries has the rocket technology. Mitsubishi Trading Company has the marketing expertise. Mitsubishi Bank finances the deal. Mitsubishi's insurance affiliate provides the insurance, and on and on.

Do you think it is possible that they might take such an approach? If they do, what in God's name do we do?

Mr. WILLIAMS. With regard specifically to keiretsu, there is some evidence that the intercompany buying that accompanies a keiretsu relationship has become somewhat, but only somewhat, less important in the last, say, 10 years than it was in the past.

The importance of a relationship, however, whether through keiretsu or not, appears to have gotten more important Japanese studies now show that only in a relatively small number of cases do Japanese purchasers of producer goods and capital goods actually look around to compare foreign companies for the best product at the best price and best delivery and so on, and that the producer goods market and the capital goods market is dominated by long-term relationships.

This has at its origin, we believe, government policies of "targeting" and supporting exclusionary practices. These policies continue to exist in industries such as polysilicon. In other industries, the policy may not officially still exist, but past policies have built up practices that continue to exclude economic considerations from procurement.

Even if these procurement practices are now "private," they are a serious hindrance to the ability of foreign companies, to enter the Japanese market. What do you do if you are a foreign producer, a foreign seller, and you look at a Japanese market where Japanese studies show that only 2 percent of Japanese buyers of producer goods regularly look around for alternative suppliers? That is an awfully formidable obstacle.

A great deal of our effort therefore, in pursuing our trade opening policy is to try to crack that procurement process. In doing so, we shall be tackling the large integrated industries you have identified.

There is, we think, also a strong case to be made in Japan that many of these practices among companies should be reviewed in light of Japanese antimonopoly law. It is difficult in most economies to justify the price differentials that are regularly paid in Japan for intermediate goods, and we believe that this is a subject for the stricter Japanese antimonopoly policy and for the stricter enforcement of Japanese law. We would like to address this in the structural impediments initiative.

Senator ROCKEFELLER. I might just say, incidentally, that, for purely parochial interests, I am very glad that you mentioned the polysilicon issue. I might say thanks to both of you because this is important to me, and I am pleased that you are both working on it.

Mike.

Mr. FARREN. Mr. Chairman, Ambassador Williams has been looking at this very closely because it is USTR that is focusing on exclusionary business practices. Obviously, the organization regrets and I would very much concur with everything he has to say.

I would make two points. One, I think your point that, oddly enough, as we engage in these discussions with the government of Japan, are we looking at a situation that has developed where the individual keiretsu groups are so large they frankly do not need government intervention in large measure to carry out some of these broader policies and have the capability of distorting markets within rather enormous industries in the world through those relationships.

That is why the only answer in that respect is not only going after government policies that are supported through subsidies and protected markets but also to look at their own domestic policies of competition and antitrust, which is what USTR is focusing on.

So that is the appropriate government role that we have to focus on in order to break up some of these relationships and, frankly, even out the playing field a bit.

The next point I would make is approaching it that way makes it not only a foreign issue but a domestic issue. There are any number of Japanese firms that have found it impossible to get into given markets and compete effectively within the Japanese market itself.

Senator ROCKEFELLER. That is an enormously important point, is it not? As to the consumer, the point has been made, but the small medium-sized Japanese business suffers as well, and this is an enormously important point which is rarely made.

Mr. FARREN. That is why we define the Japanese consumer rather broadly when we speak of the implications of the current Japanese policy that tends to restrict competition, because that also goes to the individual consumer of capital goods, often a Japanese company itself, not someone going into a supermarket and pulling something off the shelf, and also the producers of those goods who find it totally impossible to get into those markets and break into new opportunities.

Frankly, that is just bad in and of itself for the Japanese economy to curtail the capability of those firms. I would hope through some of our discussions we will have the Japanese government around to viewing it as something that makes absolute sense within their own domestic concerns, not simply because we are pointing it out as a problem for foreign firms.

Senator ROCKEFELLER. I really thank you both. I deeply apologize for keeping you so long because you both have extremely busy schedules.

But I want to say something, and if you care to respond to it, please feel free.

As I hope I have made very clear today, I fully support the administration in its efforts to negotiate on satellite procurement under Super 301. Especially given Japan's $50 billion trade surplus with the United States and the incredible value of the space technology we have sold to Japan, this type of blatant protectionism is totally unwarranted.

Before I excuse you two gentlemen and move to the next panel, however, I would like to make some general remarks on the Super 301 process and our current bilateral trade negotiations with Japan. I am not asking you to comment on this, although you certainly may if you want.

Congress crafted the Super 301 provision in the 1988 Trade Act with the expectation that it would be the centerpoint of a new, aggressive American trade policy that would address trade barriers in a much more comprehensive manner than in the past. The National Trade Estimate Report was supposed to be used as the major source of information about those barriers.

Under the Trade Act, the barriers to be cited under Super 301 are those "major barriers and trade distorting practices, the elimination of which are likely to have the most significant potential to increase U.S. exports." The National Trade Estimate published this spring cited hundreds of significant trade barriers around the world, many which fit this description very well. We had a $130 billion global trade deficit last year, $50 billion of that with Japan. Yet the administration, incredibly, concluded that there are only three countries and six specific practices that could be cited under Super 301.

Let's take a look at the three specific barriers that have been cited in Japan. First is satellites which we have discussed in some detail today. I strongly believe that this market must be opened up so foreign companies can compete in Japan. However, given the relatively limited number of applications satellites that Japan will need in the coming years, we are talking about maybe two, three, or four satellites over the next 7 or 8 years with total additional sales somewhere in the $400 to $600 million range. The second case is supercomputers where additional sales over the next few years could be perhaps $150 to $200 million. The third is wood products where estimates of possible additional sales should Super 301 succeed are in the range of half a billion dollars annually.

If we succeed fully in our goals, there would be considerably increased sales in these three areas, and we all support that fully. But, I repeat, it does not represent a change in the way we negotiate with Japan. Rather, I think this is a very shrewed strategy by the Administration to put off dealing with the real issues. It certainly demonstrates to me that in this administration, as in the previous one, trade policy is still relegated to last place. There continues to be little appreciation of the importance of trade and international competitiveness in keeping the United States strong and able to play a leading role in the world. I should add here that I am not referring to you two gentlemen, or your bosses, Secretary Mosbacher and Ambassador Hills for whom I have the greatest respect and appreciation, or your agencies. I am talking about other agencies in the Government, and the White House—those who still look at foreign policy as if the world has not changed over the last four decades.

I believe the Super 301 decision was based on doing the minimum necessary to prevent a serious counterreaction in the Congress. And that strategy seems to have succeeded. Other than the rhetoric which does not open foreign markets, I, personally, do not see any difference between what is being done on Super 301 with

Japan and had there been instead three normal Section 301 cases self-initiated by USTR. The effort by Congress to provide for a more comprehensive, aggressive, and coherent trade policy was gutted by the administration's Super 301 decision.

In addition to the three areas cited under Super 301, intellectual property issues should have been included. This subcommittee has discussed in detail the problems with Japan's patent system. Trademarks is another problem in marketing American products that could have been included under Super 301. Other areas that would have been excellent candidates were Japan's construction industry restrictions, auto parts, investing in Japan, and various systemic issues like inadequate enforcement of anti-trust laws and legal, but damaging, anti-competitive practices.

I know that one response to my comments will be that we now have the Structural Impediment Initiative, an effort to, and I quote from the joint statement issued in Paris by President Bush and Japanese Prime Minister Uno, "identify and solve structural problems in both countries that stand as impediments to trade and balance of payments adjustments with the goal of contributing to the reduction of payments imbalances." This sounds fine, until one looks at the process. I don't object to discussing impediments in the United States such as our budget deficit, the woefully small savings rate in this country, our inadequate civilian research and development expenditures, our education needs. I could easily add to the list, and these are certainly serious problems that we must address. But I am worried that this joint group, discussing both countries' impediments, issuing a joint interim assessment, and producing a joint final report, will end up with a stillborn product.

I, frankly, cannot imagine the Japanese Government agreeing in any report that the Japan Fair Trade Commission has been doing a totally inadequate job in enforcing that country's anti-trust laws. Or that the "dango" system of bid-rigging that is basic to the construction industry, a key constituency of the Liberal Democratic Party, must be broken up at a time when the LDP's entire future is being questioned by many. This simply won't happen, and we will end up with just another piece of paper to file away.

To succeed in negotations with Japan, it must be understood from the very beginning that failure will result in action. The administration insists that the SII dialog is just the first step and that they are committed to implement the conclusions of the joint report. This is hardly an incentive to the Japanese to negotiate seriously. Trade negotiating history with Japan tells us that only when there is a specific action to be taken at a date certain does Japan negotiate in a meaningful way. Without such a scenario, nothing happens.

Next year we will go through the Super 301 process again. I hope the administration will take this provision of the law more seriously at that time.

Now, gentlemen, perhaps I have challenged you or perhaps you think I am wrong. You can comment or not comment.

Mr. WILLIAMS. Senator, we certainly appreciate the strength of your views, and they are, we know, views shared by others, not just in Congress but in some parts of the business community as well.

On the other hand, we point out that there are those who think we went too far in the Super 301 exercise. Certainly I do not think any of the countries or sectors designated would agree with you that we did only the minimum necessary to get us past a political hump.

We certainly did not approach the process with that in mind. I think if you look at what we did coming up to the exercise and if you look at what we came out, you will find, we believe, a reasonable, balanced and, in historical terms, enormously aggressive trade policy for a new administration, particularly when one compares it not just to previous administrations.

What you will find, we believe, is a highly practical approach to potential trade barriers. This is true even if one looks simply to the Japanese practices we cited. We are not interested only in a satellite market or supercomputer market. We are interested in them in part because of the technological spinoffs they bring and the importance they have to other sectors. More importantly, these business sectors can make a policy point.

As I indicated in my opening remarks, we cited satellites for their relevance to Japanese procurement policies and to targeting by the Japanese Government.

We believe our focus in such areas, in the Super 301 exercise, the setting of those areas as priorities, supports us when we address other sectors such as polysilicon in the normal management of our trade relationship with Japan.

In wood products we were looking primarily to the area of standards. There are some important standards that we shall be discussing in making that a successful case.

I should also point out that there are a number of other sectors that we are addressing in the framework of the 1988 act, although not in the Super 301 exercise—for example, semiconductors, construction, and telecommunications.

The first case out of the blocks on the 1988 Trade Act was a telecommunications case which we have negotiated with Japan and which, by many reports, resulted in one of the best trade agreements we have with Japan.

As you pointed out, we also used the timing and the potential effect of Super 301 to considerable advantage with a number of countries, where we achieved what we believe are really quite important results without having to designate a country under Super 301.

I understand how, viewed from the Congress' perspective, one could have doubts about the process of the structural impediments initiative. The issues raised in the structural impediments initiative are ones that were considered in light of Super 301.

We believe that it is more potentially constructive, for us as well as for the Japanese, to address these broader structural problems in a different forum for now, to see what we can develop jointly.

The course of our discussion earlier today, I think, indicated the importance of indigenous domestic support in Japan for policies that are also in our interest. Something that is in their interest is much more likely to succeed and to have a broader effect. That is the theory behind the structural impediments initiative.

The process is joint in the sense that it is a dialogue and in the sense that joint conclusions—for example recognition that a particular problem exists or even that a particular resolution is appropriate—may result. But the "jointness" is not required. That is, we could have one view and the Japanese could have another. Therefore, separate conclusions and findings are possible.

Your point on intellectual property—and we know you are interested in this area—is one with which, as you know, we agree. We have addressed that in a particular matter, with which you are also familiar, but we have also put our broad concerns with the Japanese patent system, particularly patent flooding, into the structural impediments initiative as a part of what we have called exclusionary business practices. And it was a significant part of our presentation in Tokyo in September.

So, I understand your views and appreciate hearing them, but I cannot share them.

I believe we have used Super 301 aggressively, but responsibly and we expect to continue to use the 1988 Trade Act aggressively and responsibly to open markets. That is the policy we started with. I believe we have succeeded in some areas already, but we are looking to an even greater standard of success as we pursue the administration's objectives.

Senator ROCKEFELLER. Thank you.

Mike.

Mr. FARREN. Mr. Chairman, I will not expand much on what Ambassador Williams said. I would concur with his view of the situation, although I would just say I certainly appreciate where you are coming from with your perspective. I can understand where you could offer the outlook that you did in your statement.

Going back on the process a bit, one, I think the administration succeeded in truly hitting the ground running in terms of a trade policy.

Some of the encouraging signs are the fact that there clearly is unanimity within the leadership of the administration of the Cabinet and the subcabinet. That is very clear in some of the discussions that we have had with the Japanese on the structural impediments initiative.

They are not confronting an administration that is divided in its outlook or perspective or the seriousness with which it is undertaking the talks and hopefully that, as much as anything else, has been an effective message with the Japanese side on these variety of issues.

Also, with the administration coming in, I think it was very important for us to approach trade policy as a mosaic—ot to be too glowing in the view of it, but we have GATT underway, we had Super 301, we had very unique problems with the Japanese, you have EC 92, we have implementation of the Canadian Free Trade Agreement.

There are any number of provisions within the 1988 Trade Act which are being implemented, including 1377, which Ambassador Williams pointed out on telecommunications.

The special 301 process, both its linkage to the trade act and its linkage to GATT, and I think the administration has put together a balanced approach.

On Super 301 we literally have been involved since 1983 in looking at some of these issues. I can assure you we literally went back through every trade issue that has been brought up by industry or the U.S. Government going back 5 years to examine it and determine whether or not it appropriately fits into Super 301 at this point.

And those considerations went as far as the Cabinet in a number of discussions to determine what was the appropriate collection of issues to bring forward in the context of Super 301.

I do not think any of the issues that were discussed that are of interest to U.S. industry was left unaddressed by U.S. trade policy. Every one of them was examined as to what was the best vehicle to move ahead and make progress for U.S. industry.

In some cases it was Super 301, specific provisions. For example, the telecommunications provision, the 301 that is now underway on construction, follow-up on Moss auto parts which we are doing vigorously, looking at special 301, tying it into GATT.

Now, I would hope that the byproduct of that planning that was done by the administration and the progress that we make over the next year would find Ambassador Williams and I back here next year at this time with you much more satisfied with the manner in which the administration is addressing specific sectoral issues and handling overall trade policy.

And I have to believe that in a year's time your judgment reasonable can be different than it is today.

Senator ROCKEFELLER. That is encouraging, in terms of what both of you have to say. I am embarrassed that I have kept you here as long as I have, but I found this enormously useful. I think the record that is built on this subject is very important.

I think you both know that I feel that the United States is very lucky to have both of you in its public service. I thank you both very much.

Our second panel will consist of Mr. Jeffrey Manber, who is Executive Director of the Space Foundation here in D.C.; and Mr. Courtney Stadd, former Director of DOT's Space Transportation Office.

And I would ask both witnesses to come forward.

My apologies, gentlemen. I also apologize to both of you for having to wait for so long. And I enormously look forward to what you both have to say.

Mr. Stadd, if you want to begin.

STATEMENT OF COURTNEY A. STADD, AEROSPACE CONSULTANT

Mr. STADD. Thank you, Mr. Chairman.

I would like to, if I may, submit my full statement for the record.

Senator ROCKEFELLER. Of course.

Mr. STADD. And in the interest of time, and to allow a period for questions, I will just give you the highlights, if I may, of the statement.

First of all, I think, Mr. Chairman, you are to be applauded for giving consideration at this time to the competitive issues associated with the Japanese space industry, because Japan is just beginning to develop autonomy in its space capabilities.

For example, it is probably 3 to 4 years away from launching its 2-ton orbiting vehicle, the H–II, which, as has already been stated, is the first entirely native-built Japanese launcher.

Many may view this morning's discussion as premature. However, I recall that a brief 3 or 4 years ago, few in the United States Government and industry took seriously the prospect of competition from China's developmental rocket called the Long March. Yet last fall, much to the dismay of our commercial launch industry, President Reagan approved the export of three United States made satellites for launch on Chinese rockets.

The President's decision was particularly disconcerting because it came after 5 years of numerous congressional and administration initiatives to help our launch industry compete against foreign supported competition.

Therefore, I would submit, Mr. Chairman, that inconsistent U.S. policies pose as great a challenge to business planning for our U.S. private sector as does international competition.

Which brings me to this morning's issue regarding the question of how best to respond to potential competition from Japan's H–II.

In my formal statement I note that while with the United States Department of Commerce a couple of years ago, I had the opportunity to visit Japan and meet with numerous officials from leading industry and government space organizations.

Although Japan's space budget is one-eleventh of NASA's current budget, my visit to Japan convinces me that they are, indeed, developing an autonomous manned and unmanned space program for the 21st century.

I also came away persuaded that Japan is still in the midst of forging a consensus as to what the exact scope and nature of that commitment to space ought to be. I have no doubt, however, that once consensus is achieved, their space planning will reflect the type of long range, consistent, strategic planning sorely absent here in the United States.

In my formal statement I note that Japan's Space Activities Commission, which is the equivalent of the recently formed White House National Space Council, has been issuing a series of blueprints for their future activities in space.

And under separate cover, Mr. Chairman, I would like to submit for the record a summary of one of the latest space planning documents, if I may.

Senator ROCKEFELLER. Of course.

Mr. STADD. Until the advent of the H–II, Japan tended to ignore the commercial launch services market. This was largely due to constraints imposed by the licensing agreement with the United States for their previous N–I, N–II, and H–I launch vehicle technologies.

In fact, NASDA officials continue to downplay any interest in the commercial launch market.

However, I understand that Mitsubishi, the prime contractor for the H–II, has periodically indicated that it could provide the same type of marketing services for the H–II, which Arianespace is so effectively providing for Europe's Ariane rocket launcher.

Also, in October of 1988, Mitsubishi, Kawasaki, NEC, Japan Aviation Electronics Industry, and several other aerospace firms,

formed a special consortium to work with NASDA on procurement and inspection issues relating to the reliability of H-II components.

The consortium, which includes property casualty firms, is considered by some to be the first step toward commercializing the H-II.

Notwithstanding these indicators of commercial interest, we must recognize some major constraints on the competitive potential of the H-II. And I will name just a few, if I may.

The first is, compared to U.S. launch costs, it would appear at present that the H-II is a fairly expensive vehicle. In fact, the per unit cost is probably approximate to the most expensive launcher in our commercial arsenal, which is the Martin Marietta Titan, which is currently on the market at about $100 million per copy.

Secondly, the most ambitious plans announced to date call for no more than four to six launches a year in the late 1990s. And one might presume that since most of these launches will be carrying Japan's own space payloads, that much of that capacity will be used up.

And finally, the H-II will of course require at least some time to establish a reliable track record to attract outside commercial customers.

Thus, at this time, I think it premature to draw any clear conclusions regarding the exact nature of the competitive threat posed by the H-II. Instead, Mr. Chairman, what one seems to be observing in Japan is what I would almost refer to as a mosaic of various competing space initiatives. And certainly the H-II plays a very critical role in this mosaic.

But the consequences of this mosaic of space initiatives for Japan's role in space, vis-a-vis this country, in the early 21st century, I think at this point are difficult to clearly foresee.

However, one conclusion is clear. The era in which the United States could impose unilateral restrictions on the Japanese use of space technology, and I am referring of course to the 1969 United States-Japanese Space Cooperation Agreement, is long over.

Rather than focusing solely on the threat posed by the H-II, I believe the United States should be evaluating it in the total context of Japan's overall space capabilities and intentions in the coming decade.

It may turn out, in fact, that there are as many opportunities for cooperation as competition.

As a side note, Mr. Chairman, I have recently learned that Arianespace was in Tokyo just a few weeks ago. And I gather from sources that an offer was made to joint venture with the Japanese with their H-II and the Ariane V, which is the large rocket that the French are intending to field sometime in the mid- to late-1990's.

So we already have at least the Europeans that are exploring some joint venturing with the Japanese.

Unfortunately, I see, Mr. Chairman, no evidence that the United States is committing serious resources, however, to the type of systematic assessment of Japan's long-range intentions that I think are so sorely required.

I would like to suggest that the United States-Japan Space Cooperation Agreement might in fact provide just the forum for re-

thinking the terms and conditions which govern the relations between our two space sectors.

Before concluding, I would like to make one observation, which I think points up the complexity of developing a realistic strategy for dealing with Japan's emergence in space.

Although United States industry clearly desires greater access to Japan's telecommunications market, it should be noted that all three major United States satellite manufacturers enjoy extensive partnerships with various Japanese trading firms.

And in fact, I understand from industry that the five Japanese communications satellites that are scheduled for launch in the coming year, including one that is to be launched on a United States launcher, the commercial Titan, have been built primarily by United States firms.

In my discussions with this segment of the U.S. space industry, it appears clear that industry is very sensitive to any change in U.S. trade policy which might serve to unduly undermine these relationships. This is not, in any shape or form, to suggest that there are not serious concerns about market penetration, I am just using that as one example, in terms of the complexity of shaping that relationship with Japan.

Mr. Chairman, I would like, if I may, to stop at this point and be available for questions.

[The statement follows:]

STATEMENT
OF
COURTNEY A. STADD
Aerospace Consultant
(Former Director, Office of Commercial Space Transportation)
U.S. Department of Transportation

before the

Subcommittee on Foreign Commerce and Tourism
United States Senate

October 4, 1989

I APPRECIATE THE COMMITTEE GIVING ME AN OPPORTUNITY TO DISCUSS SOME OF THE REALITIES ASSOCIATED WITH THE POSSIBLE INTRODUCTION OF THE JAPANESE H-II INTO THE COMMERCIAL LAUNCH SERVICES MARKETPLACE.

THE CHAIRMAN IS TO BE APPLAUDED FOR GIVING CONSIDERATION TO AN ISSUE WHICH MAY APPEAR RATHER ABSTRACT TO MANY. AFTER ALL, JAPAN IS AT LEAST THREE OR FOUR YEARS AWAY FROM LAUNCHING THEIR H-II LAUNCH VEHICLE. THREE OR FOUR YEARS, OF COURSE, IS A RELATIVELY BRIEF PERIOD OF TIME IN THE SPACECRAFT BUSINESS WHERE DESIGNING, BUILDING AND FLYING SPACE QUALIFIIED HARDWARE OFTEN TAKES THREE TO FIVE YEARS OR MORE.

DURING THE EARLY 1980S, FEW IN GOVERNMENT AND INDUSTRY TOOK SERIOUSLY THE PROSPECT OF COMPETITION FROM CHINA'S DEVELOPMENTAL LONG MARCH ROCKET PROGRAM. YET, LAST FALL, TO THE DISMAY OF MANY IN THE U.S. COMMERCIAL LAUNCH INDUSTRY, PRESIDENT REAGAN APPROVED THE EXPORT OF THREE U.S. MADE SATELLITES FOR LAUNCH ON CHINESE ROCKETS. THE WILLINGNESS OF THE U.S. TO ALLOW THESE THREE SATELLITES TO BE CAPTURED BY THE CHINESE GOVERNMENT'S ADMINISTERED AND SUPPORTED LONG MARCH MARKETING CAMPAIGN RAISED DOUBTS IN THE U.S. LAUNCH INDUSTRY ABOUT THE LONG RANGE COMMITMENT OF THE U.S. GOVERNMENT TO HELPING FOSTER A COMPETITIVE DOMESTIC INDUSTRY. THE PRESIDENT'S DECISION WAS PARTICULARLY DISCONCERTING BECAUSE IT CAME AFTER OVER FIVE YEARS OF NUMEROUS CONGRESSIONAL AND ADMINISTRATION INITIATIVES TO HELP OUR LAUNCH INDUSTRY COMPETE AGAINST FOREIGN GOVERNMENT SUPPORTED COMPETITION.

I WOULD SUBMIT THAT INCONSISTENT U.S. POLICIES POSE AS GREAT A BUSINESS PLANNING PROBLEM FOR OUR PRIVATE SECTOR AS DOES INTERNATIONAL COMPETITION. THIS BRINGS ME TO THE ISSUE OF HOW WE SHOULD BE RESPONDING TO POTENTIAL COMPETITION FROM JAPAN'S H-II...

I MAKE NO PRETENSE TO HAVING EXPERTISE IN TRADE POLICY AS IT RELATES TO JAPANESE SPACE TECHNOLOGY. RATHER, MY COMMENTS DERVIVE FROM HAVING WORKED CLOSELY WITH THE U.S. SPACE INDUSTRY FOR NEARLY FIFTEEN YEARS IN BOTH THE PRIVATE AND PUBLIC SECTORS

-- MOST RECENTLY, AS FORMER DIRECTOR, OFFICE OF COMMERCIAL SPACE TRANSPORTATION, U.S. DEPARTMENT OF TRANSPORTATION. IN THAT POSITION, I WAS RESPONSIBLE FOR TACKLING THE COMPLEX POLICY AND REGULATORY ISSUES ASSOCIATED WITH PIONEERING THE ESTABLISHMENT OF A DOMESTIC COMMERCIAL LAUNCH INDUSTRY. A GOAL WHICH WAS MADE MORE DIFFICULT BY A LAUNCH SERVICES MARKETPLACE POPULATED BY FOREIGN LAUNCH ORGANIZATIONS SEEN BY THEIR RESPECTIVE GOVERNMENTS AS SATISFYING AS MUCH POLITICAL AS ECONOMIC OBJECTIVES.

MY COMMENTS ALSO DERIVE FROM A MAY 1986 VISIT TO JAPAN WHILE I WAS AN OFFICIAL AT THE U.S. DEPARTMENT OF COMMERCE ADVISING THE OFFICE OF THE SECRETARY ON COMMERCIAL SPACE POLICY MATTERS. AT THAT TIME, I MET WITH OFFICIALS FROM VARIOUS JAPANESE SPACE ORGANIZATIONS, INCLUDING, THE NATIONAL SPACE DEVELOPMENT AGENCY (NASDA); THE INSTITUTE OF SPACE AND ASTRONAUTICAL SCIENCES (ISAS); KEIDANREN (FEDERATION OF ECONOMIC ORGANIZATIONS); NASDA'S TSUKUBA SPACE CENTER; THE MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY (MITI); AND C.ITOH, A MAJOR PARTNER IN THE JAPANESE COMMUNICATION SATELLITE VENTURE.

ALTHOUGH JAPAN'S SPACE BUDGET IS ONE-ELEVENTH OF NASA'S CURRENT BUDGET, MY VISIT TO JAPAN CONVINCES ME THAT THEY ARE COMMITTED TO DEVELOPING THE NECESSARY INFRASTRUCTURE TO ALLOW FOR ULIMATE AUTONOMOUS JAPANESE MANNED AND UNMANNED SPACE ACTIVITY IN THE 21ST CENTURY. I ALSO CAME AWAY PERSUADED THAT JAPAN IS STILL IN THE MIDST OF FORGING A CONSENSUS AS TO WHAT THE EXACT SCOPE AND NATURE OF THAT COMMITMENT TO SPACE ACTIVITY SHOULD BE. ONCE THAT CONSENSUS IS ACHIEVED, HOWEVER, I HAVE NO DOUBT THAT THEIR SPACE PLANNING WILL REFLECT THE TYPE OF LONG RANGE, CONSISTENT, STRATEGIC PLANNING SORELY ABSENT HERE IN THE U.S.

AS PART OF ITS CONSENSUS BUILDING PROCESS, JAPAN HAS BEEN ISSUING A SERIES OF BLUEPRINTS FOR MANNED AND UNMANNED SPACE ACTIVITY LAID OUT BY ITS SPACE ACTIVITIES COMMISSION (SOMEWHAT EQUIVALENT TO THE RECENTLY FORMED WHITE HOUSE NATIONAL SPACE COUNCIL) IN 1978 AND REVISED IN 1984. UNDER SEPRATE COVER, I WOULD LIKE TO SUBMIT FOR THE RECORD A SUMMARY OF THIS SPACE PLANNING DOCUMENT. YOU WILL NOTE THAT ONE OF THE POLICY'S GUIDING PRINCIPLES IS THE GOAL OF OBTAINING "TECHNOLOGICAL CAPABILITY BY WHICH JAPAN IS ABLE TO PUT INTO EFFECT OUR AUTONOMOUS PROGRAM ..." INDEED, DURING THE 1980S, JAPAN HAS BEEN DEMONSTRATING ITS EMERGING SPACE CAPABILITIES -- ORBITING DOMESTIC COMMUNICATIONS SATELLITES; SENDING INSTRUMENTS TO THE COMET HALLEY; DEVELOPING THEIR JAPANESE EXPERIMENTAL MODULE FOR LINKUP TO THE U.S. LED INTERNATIONAL SPACE STATION; RESEARCHING THE DEVELOPMENT OF THEIR OWN SPACE PLANE (HOPE) WHICH WOULD BE LAUNCHED ON THE H-II; AND, OF COURSE, BUILDING H-II -- JAPAN'S FIRST ORBITAL LAUNCHER CONSTRUCTED WITHOUT DIRECT RELIANCE ON U.S. TECHNOLOGY TRANSFERS.

THE H-II IS CURRENTLY SCHEDULED FOR LAUNCH SOMETIME IN 1993. UNLIKE OTHER WESTERN LAUNCHERS, IT USES CRYOGENICS IN BOTH THE

FIRST AND SECOND STAGES. (U.S. ROCKET ENGINEERS WERE SURPRISED BY THIS USE OF TWO STAGES BECAUSE U.S. ROCKETS RELY ON THREE STAGES. EXPERTS SAY THIS STRATEGY IS CONSISTENT WITH A JAPANESE PHILOSOPHY WHICH FAVORS FEWER SUBSYSTEMS WHICH CAN DEVELOP FEWER IN-FLIGHT PROBLEMS.) THIS CONFIGURATION SHOULD ALLOW FOR HIGHER PERFORMANCE.

UNTIL THE ADVENT OF THE H-II, JAPAN TENDED TO IGNORE THE COMMERCIAL LAUNCH SERVICES MARKET. THIS WAS LARGELY DUE TO THE CONSTRAINTS IMPOSED BY THEIR LICENSING AGREEMENTS WITH THE U.S. FOR THEIR PREVIOUS N-I, N-II AND H-I LAUNCH VEHICLE TECHNOLOGIES. ALTHOUGH NASDA OFFICIALS CONTINUE TO DOWNPLAY ANY SERIOUS INTEREST IN THE COMMERCIAL LAUNCH SERVICES MARKET, IT IS NOTEWORTHY THAT THE BOOSTER'S PAYLOAD FAIRING IS JUST THE RIGHT SIZE NEEDED TO ACCOMODATE TWO U.S. DELTA ROCKET-SIZED PAYLOADS AND ONE LARGE INTELSAT-CLASS SATELLITE. FURTHER, I UNDERSTAND THAT MITSUBISHI, PRIME CONTRACTOR FOR THE H-II, HAS INDICATED FROM TIME TO TIME THAT IT COULD PROVIDE THE SAME MARKETING SERVICES WHICH ARIANESPACE SO EFFECTIVELY PERFORMS FOR EUROPE'S ARIANE ROCKET.

IN OCTOBER 1988, MITSUBISHI, KAWASAKI, NEC, JAPAN AVIATION ELECTRONICS INDUSTRY, AND SEVERAL OTHER AEROSPACE COMPANIES FORMED A SPECIAL CONSORTIUM TO WORK WITH NASDA ON PROCUREMENT AND INSPECTION ISSUES RELATING TO ENSURING RELIABILITY OF H-II COMPONENTS. THE CONSORTIUM MEMBERSHIP WHICH INCLUDES PROPERTY CASUALTY COMPANIES IS CONSIDERED BY SOME OBSERVERS TO BE A FIRST STEP TOWARD COMMERCIALIZATION OF THE H-II.

THESE AND OTHER INDICATORS COULD WELL BE CONSTRUED AS EVIDENCE THAT JAPAN IS BUILDING TOWARD MAKING THE H-II AN AGGRESSIVE NEW ENTRANT IN A SATELLITE MARKET WHICH IS WITNESSING MORE AND MORE LAUNCHERS CHASING A SET NUMBER OF CUSTOMERS. BUT A SOPHISTICATED U.S. RESPONSE TO THE H-II MUST ALSO TAKE INTO ACCOUNT SOME MAJOR CONSTRAINTS ON THE H-II'S ABILITY TO COMPETE.

FIRST, COMPARED TO U.S. LAUNCH INDUSTRY COSTS, THE H-II DOES NOT APPEAR TO REPRESENT A FUNDAMENTAL REDUCTION IN LAUNCH COSTS. DEVELOPMENT COSTS, INCLUDING THE LAUNCH COMPLEX AT TANEGASHIMA, MAY RESULT IN A PER UNIT COST OF $100 MILLION (COMPARABLE IN PRICE TO THE MOST EXPENSIVE U.S. LAUNCHER -- THE TITAN). SECOND, THE MOST AMBITIOUS PLANS ANNOUNCED TO DATE CALL FOR NO MORE THAN FOUR TO SIX LAUNCHES A YEAR IN THE LATE 1990s. AND MOST OF THESE LAUNCHES WILL BE DEDICATED TO LOFTING JAPAN'S OWN SATELLITES. IN ADDITION, THE H-II WILL REQUIRE SOME PERIOD OF TIME TO ESTABLISH A RELIABLE TRACK RECORD WHICH WILL CONVINCE FOREIGN CUSTOMERS TO PLACE THEIR EXPENSIVE PAYLOADS ON THIS VEHICLE. (OF COURSE, CHINA'S LONG MARCH HAS SHOWN THAT POLICY-DRIVEN PRICING TERMS, ALONG WITH VARIOUS QUID PRO QUOS, CAN HELP ASSUAGE THE FEARS OF SKEPTICAL CUSTOMERS.)

THUS, AT THIS POINT IN TIME, IT IS HIGHLY PREMATURE TO DRAW ANY

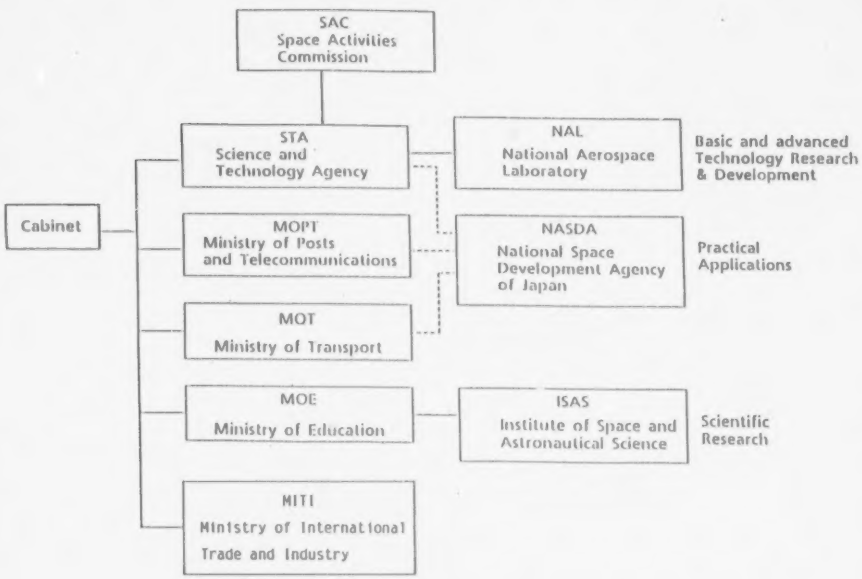
CLEAR CONCLUSIONS REGARDING THE EXACT NATURE OF THE COMPETITIVE THREAT POSED BY THE H-II. INSTEAD, WHAT ONE SEEMS TO BE OBSERVING IN JAPAN IS A MOSAIC OF SPACE INITIATIVES -- THE H-II REPRESENTING A CRITICAL ELEMENT -- WHOSE CONSEQUENCES FOR JAPAN'S ROLE IN SPACE VIS-A-VIS THE UNITED STATES ARE STILL DIFFICULT TO FORESEE. FOR THIS OBSERVER, ONE CONCLUSION IS CLEAR -- THE ERA IN WHICH THE U.S. COULD IMPOSE UNILATERAL RESTRICTIONS ON THE JAPANESE USE OF SPACE TECHNOLOGY (TO WIT: THE 1969 U.S.-JAPAN SPACE COOPERATION AGREEMENT) IS LONG OVER. JAPAN IS SLOWLY AND INEXORABLY BUILDING TOWARD BEING A FULLY INDEPENDENT SPACE POWER BY THE EARLY 21ST CENTURY. RATHER THAN FOCUSING SOLELY ON THE THREAT POSED BY THE H-II, THE U.S. SHOULD EVALUATE THE H-II IN THE CONTEXT OF JAPAN'S OVERALL SPACE CAPABILITIES AND INTENTIONS OVER THE COMING DECADES. IT MAY TURN OUT THAT THERE MAY BE AS MUCH OPPPORTUNITY FOR COOPERATION AS COMPETITION BETWEEN OUR TWO EMERGING COMMERCIAL AND CIVIL SPACE SECTORS. UNFORTUNATELY, I SEE NO EVIDENCE THAT THE U.S. IS COMMITTING ANY SERIOUS RESOURCES TO THIS TYPE OF LONG RANGE ASSESSMENT.

BEFORE CONCLUDING, I WOULD LIKE TO MAKE ONE OBSERVATION ABOUT THE COMPLEXITY OF DEVELOPING A COHERENT STRATEGY FOR DEALING WITH JAPAN'S EMERGENCE IN SPACE: ALTHOUGH U.S. INDUSTRY WOULD CLEARLY ENDORSE GREATER ACCESS TO JAPAN'S TELECOMMUNICATIONS MARKET, IT SHOULD BE NOTED THAT ALL THREE MAJOR U.S. SATELLITE MANUFACTURERS ENJOY EXTENSIVE PARTNERSHIPS WITH VARIOUS JAPANESE TRADING COMPANIES. IN FACT, ALL FIVE JAPANESE COMMUNICATIONS SATELLITES TO BE LAUNCHED THIS YEAR (ONE IS BEING LAUNCHED BY MARTIN MARIETTA'S COMMERCIAL TITAN, THE REMAINDER ON ARIANE) HAVE BEEN BUILT PRIMARILY BY U.S. FIRMS. IN MY DISCUSSIONS WITH THIS SEGMENT OF THE U.S. SPACE INDUSTRY, IT IS CLEAR THAT INDUSTRY EXECUTIVES ARE SENSITIVE TO ANY U.S. TRADE POLICY WHICH MIGHT SERVE TO UNDULY UNDERMINE THESE RELATIONSHIPS.

IN CONCLUSION, I BELIEVE THAT THE U.S. GOVERNMENT, IN PARTNERSHIP WITH INDUSTRY, SHOULD BE A LOT MORE SYSTEMATIC THAN THEY ARE NOW IN ASSESSING THE LONG RANGE CONSEQUENCES OF A FULLY INDEPENDENT JAPANESE SPACE POWER. SUCH A LONG RANGE VIEW MIGHT SUGGEST OPPORTUNITIES FOR COLLABORATION AS WELL AS COMPETITION WITH JAPAN. THE 1969 U.S.-JAPAN SPACE COOPERATION AGREEMENT MIGHT PROVIDE ONE POSSIBLE MECHANISM FOR REVIEWING TERMS AND CONDITIONS FOR A RELATIONSHIP WITH JAPAN WHICH REFLECTS NEW REALITIES.

THANK YOU, MR. CHAIRMAN, FOR THIS OPPORTUNITY TO ADDRESS THIS IMPORTANT TOPIC.

Principal Orgnizations Involved in Japan's Space Activities



Long Range Views of Japanese Space Activites

the latter half of 1980s ·

Development of Space Science and Technology

- Space Science
- Development of H-II, ETS Ⅵ, JEM
- R & D on New Space Transportation

Initiation of the Development of Space Infrastructure

[Technology Transfer to Private Industry]

the latter half of 1990s ·

- Operation of S.S. (JEM)
- Space Infrastructure
  COP, POP, OMV, STS
- Exploration of the Moon

Deployment of Space Infratructure

[Commercialization of Space Activities]

around the Year 2010

Mature phase of Space Activities

- Exploration of Solar System

[Extensive Commercilization of Space Activities]

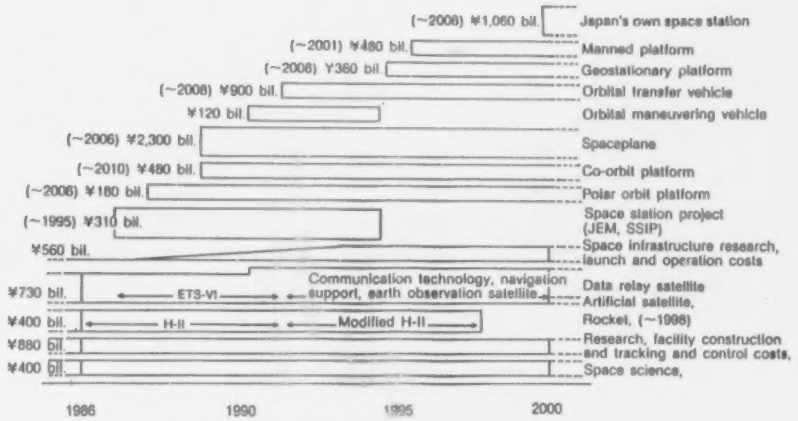
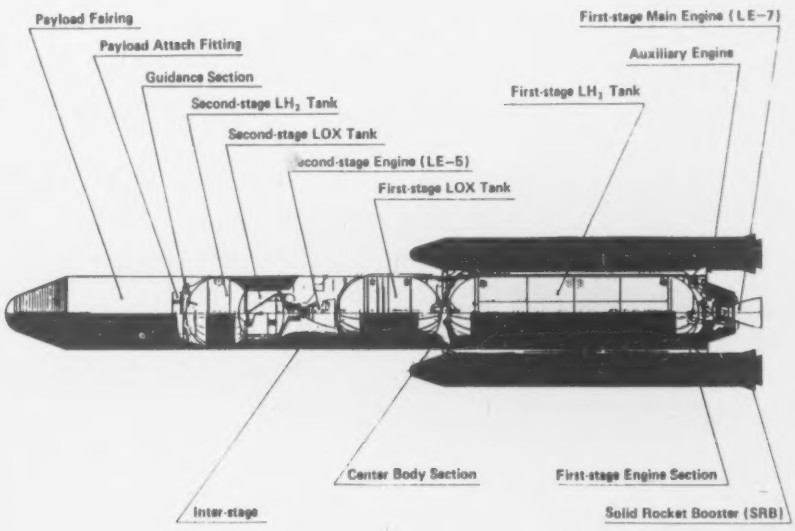


Fig. 2: Development Costs of Major Projects

H-II Launch Vehicle

NASDA



Title

NEW SPACE TRANSPORTATION SYSTEM

1. ADVISORY COMMITTEE ON SPACE PLANE UNDER R & D BUREAU OF STA
   - R & D POLICY FOR THE DEVELOPMENT OF NEW SPACE TRANSPORTATION SYSTEM

2. CURRENT ACTIVITIES

   NATIONAL AEROSPACE LABOLATORY
   - CONCEPTUAL STUDY OF MANNED AIRCRAFT-TYPE BASING SPACE PLANE
   - R & D KEY TECHNOLOGY (e.g. PROPULSION(RAMJET,SCRAM JET,ETC.), HYPERSONIC AERODYNAMICS, ADVANCED STRUCTUAL MATERIALS, ETC.)

   INSTITUTE OF SPACE AND ASTRONAUTICAL SCIENCE
   - CONCEPTUAL STUDY OF HIMES (HIGHLY MANEUVERABLE EXPERIMENTAL SPACE VEHICLE)
   - R & D ON NAVIGATION, GUIDANCE & CONTROL SYSTEM, PROPULSION (LOX/LH ROCKET), BODY STRUCTURE, LAUNCH & RECOVERY, ETC.

   NASDA
   - CONCEPTUAL STUDY OF HOPE (H-II ORBITING PLANE)
   - R & D ON THERMAL PROTECTION SYSTEM, NAVIGATION, GUIDANCE AND CONTROL TECHNOLOGY, STRUCTUAL SYSTEM DESIGN ETC.

3. DEVELOPMENT POLICY FOR JAPANESE SPACE TRANSPORTATION SYSTEM

   (1) STRATEGY
   - SEPARATION OF MANNED TRANSPORTATION AND UNMANNED CARGO TRANSPORTATION
   - A FURTHER DEVELOPMENT ON UNMANNED CARGO TRANSPORTATION VEHICLE THROUGH H-II ROCKET
   - AN IMMEDIATE START OF R & D FOR MANNED SPACE TRANSPORTATION SYSTEM

   (2) GOAL FOR MANNED SPACE TRANSPORTATION SYSTEM
   - A WINGED, HORIZONTAL TAKE-OFF/LANDING REUSABLE MANNED VEHICLE i.e "SPACE PLANE" WITH AS MUCH SAFETY AND OPERATIONAL FLEXIBILITY AS COMMERCIAL AIR PLANE

   (3) BASIC POLICY ON PROMOTION OF R & D OF SPACE PLANE
   - AN EFFECTIVE R & D INSTITUTIONAL FRAMEWORK
   - ADVANCE OF JAPAN'S INDEGENOUS TECHNOLOGICAL CAPABILITY
   - AN OPENNESS AND FLEXIBILITY TO INTERNATIONAL COOPERATION
   - CLOSE RELATIONSHIP WITH UNMANNED CARGO VEHICLE DEVELOPMENT
   - HIGH PRIORITY NATIONAL PROGRAM

(4) TECHNOLOGY TO BE DEVELOPED FOR SPACE PLANE

DESIGN OF AERODYNAMIC CONFIGURATION FROM LOW TO HYPERSONIC SPEED, HIGHTEMPERATURE/CRYOGENIC COMPOSITE MATERIAL/STRUCTURE, GUIDANCE/FLIGHT CONTROL IN HIGH ALTITUDE AND SPACE, LONG REUSABLE ROCKET ENGINE. AUTOMATIC TAKE-OFF/LANDING, RECOVERY SYSTEM ETC.

(LONG-TERM DEVELOPMENT ITEMS)
SYSTEM, AIRBREATHING ENGINE, ENGINE/VEHICLE INTEGRATION, SUPER HIGH TEMPERATURE THERMAL PROTECTION MATERIAL, MANNED FLIGHT ETC.

(5) SOME RECOMMENDATIONS FOR SPACE PLANE

(A) BASIC PLAN

PHASED APPROACH WITH A GOAL OF EXPERIMENTAL OPERATION IN EARLY 2000'S
(I.E PLANNING PHASE, EXPERIMENT/DEMONSTRATION PHASE, PROTOTYPE DEVELOPMENT PHASE)

(B) FOR PLANNING PHASE

IMMEDIATE START OF SYSTEM STUDY ON EXPERIMENTAL VEHICLE AND R & D PLAN
INSTITUTIONAL FRAMEWORK FOR TIME BEING

NAL - SYSTEM STUDY ON MANNED HYPERSONIC VEHICLE, R & D ON ITS ELEMENT TECHNOLOGIES, ESPECIALLY AIR BREATHING ENGINE

ISAS- RESEARCHES ON FLIGHT DYNAMICS AND CONTROL THROUGH BALLISTIC FLIGHT EXPERIMENT ETC.

NASDA DEVELOPMENT OF HOPE AND RELEVANT TECHNOLOGIES

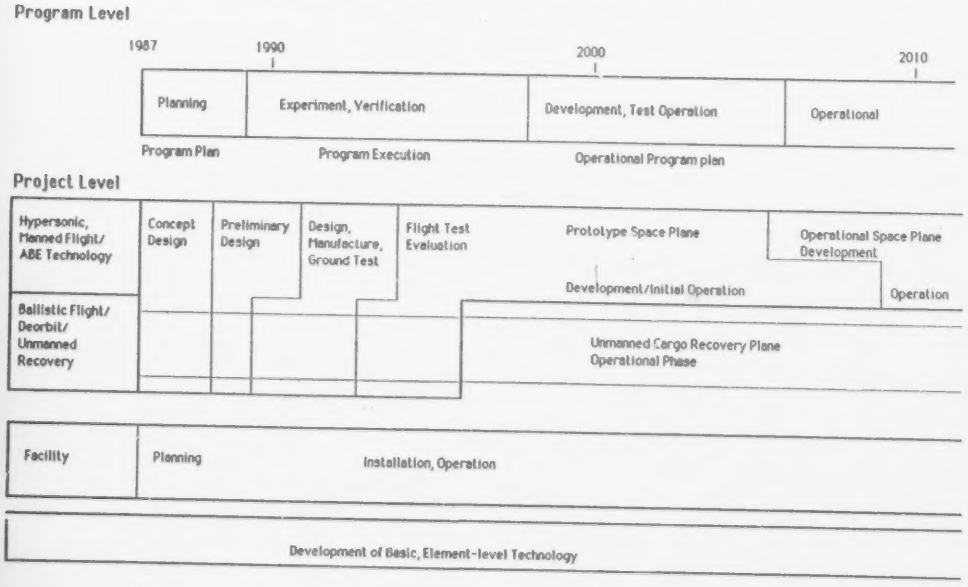
SAC - STRATEGIC PLANNING

(C) ESTABLISHMENT OF SYSTEM STUDY TEAM WITH A NUCLEUS OF NAL, NASDA AND ISAS

(D) URGENT CONSTRUCTION OF R & D FACILITIES

(6) $ 13 BILLION INVESTMENT NECESSARY FOR DEVELOPMENT OF UNMANNED CARGO VEHICLE AND PROTOTYPE SPACE PLANE

FLOW OF SPACE PLANE R & D IN JAPAN



NASDA

OBJECTIVES

(1) To acquire winged vehicle reentry technologies
(2) To perform scientific and engineering experiments
(3) To carry cargoes to/from JEM and other platforms

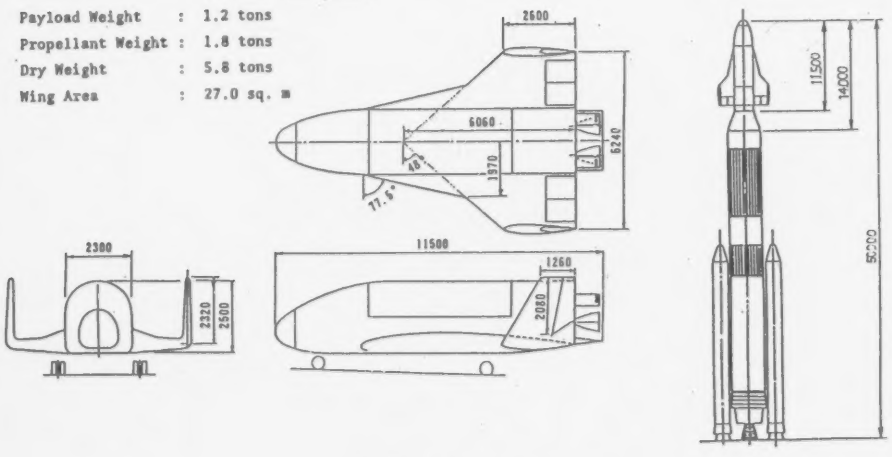
FUNDAMENTAL REQUIREMENTS

(1) Be launched by H-II rocket from Tanegashima Space Center and land horizontally on a conventional runway
(2) Unmanned cargo transport, fully automatic pilotting
(3) Operational in the latter half of 1990s

NASDA

Gross Weight	:	8.8 tons (at launch) 7.0 tons (at return)
Payload Weight	:	1.2 tons
Propellant Weight	:	1.8 tons
Dry Weight	:	5.8 tons
Wing Area	:	27.0 sq. m

All dimensions are in millimeters.



SYSTEM CONCEPT

Senator ROCKEFELLER. Okay.
Go ahead, Mr. Manber.

STATEMENT OF JEFFREY MANBER, EXECUTIVE DIRECTOR, THE SPACE FOUNDATION

Mr. MANBER. Mr. Chairman, thank you.

On behalf of the Space Foundation, let me thank you for the opportunity to discuss the emerging competition from the Japanese space effort.

The Space Foundation is a non-profit organization, working to bring about greater industry involvement in space commerce. It is our belief that our continued leadership in space must involve a wider and wider circle of industrial expertise in order to maintain and build on our current trade levels.

Having said this, let me add quickly that I speak here today not for the companies associated with the foundation or regional space business roundtables, and certainly not for the people who are working on the establishment of a round table right now in Tokyo, but rather from my own personal perspective on the situation. I would also appreciate leaving a background paper on the H–II written for the Foundation by Lawrence Aronovitch.

Let me suggest that I step back for a moment and suggest that we should concentrate less on the perceived threat of the H-II and more on continuing the change in the relationship between our domestic government and our space transportation industry.

There are four challenges that we are confronting today.

Number one, we are faced with a domestic industry which still looks to the government for basic R&D and is too often fearful of risking company funds for new projects.

Number two, at the same time, our established space transportation companies have received few indications from the government regarding its needs and its wants. The U.S. Government remains, after all, the largest customer for space transportation and satellite services.

And to just quickly list one example, will we be moving closer toward Litesat's, which are small, lightweight satellites, or will we stay with the large, complex satellites we have been using for the past few years?

This is an important indicator of which way the market is going to go. And the U.S. Government is a prime player in that.

Number three, smaller, innovative companies must often face an unresponsive and sometimes hostile response from government agencies.

Senator ROCKEFELLER. Could you expand on that?

Mr. MANBER. There are a number of smaller companies, new, emerging space companies in space transportation and satellite services, and very often the government agencies have belittled their involvement because they are not established companies, because they are entrepreneurial or smaller firms that are not traditional players in the aerospace community.

It is my hope that the successful launch of the Orbital Sciences Corporation Pegasus, which is a program to launch small satellites from a B–52, or with the successful launch of smaller companies

like American Rocket or satellite navigation services like Geostar, will go a long way toward convincing the U.S. Government, the key players, and others in industry, that the small companies can give an important role to the U.S. space effort.

It might also turn out that the smaller companies cannot play a significant role, but the verdict is still out at this time.

If that answers your question.

And finally, the fourth is that we continue to debate future programs, such as the advance launch system, the Shuttle C, the national aerospace plane. But few predict or believe in their heart that we are going to see all three or two or even one being built.

In short, in my view, we are confronted with space policies which are seemingly divorced from budget and current business realities.

The story of the H–II has a familiar ring to it. It is the story first told, as you have alluded to this morning, in the steel industry, the auto industry, computers and satellite communications.

It is without a doubt a threat to U.S. market share for space transportation. Indeed, the industry officials that I have spoken to are already talking not just about the H–II, but the post-H–II launch vehicles and how we are going to react to that.

There should be no surprises. In most cases, Japanese industry is able to advance from licensing foreign technology, to manufacturing key components, to selling the whole system in a few short years.

Many in the U.S. space community are frustrated by the lack of leadership from the government. We behave, and here I will say both government and industry, as if the world was frozen in place about 1965. And we cannot understand why other nations will not stand still.

I also feel that we have ceased to fund for innovation, and yet wonder why international competition is now emerging.

Very quickly, if I may, let us take a look at space transportation.

From the 1950's to the 1970's, the United States made a commitment to providing a family of launch vehicles. In rapid succession, we went from the Thor in 1958, the Atlas, the Scout, the Redstone, the Delta in 1962, and the Titan in 1964.

These were designed for military purposes, but the availability of these ELVs was soon leveraged by American companies into an unexpected commercial market, the multibillion-dollar communications satellite industry.

I would like to stress this point. We committed the necessary resources to develop a technology which had no commercial demand because it was in our strategic interest. And that sounds much like the Japanese today.

The fact that a commercial market emerged within 10 years after the existence of these launch vehicles should not be noteworthy, except there are many today who believe there are no additional space-based markets. And they apparently are insisting on market demand before there is product availability. And I think that is a shame.

The question, of course, is what should we do to ensure U.S. market share in the space transportation market of the coming decade. And if I may quickly articulate three or four things I think we should be doing.

Number one, the government must articulate its future needs, and where appropriate, provide long-term funding for advanced research.

Senator ROCKEFELLER. Who in government?

Mr. MANBER. NASA needs to be tasked by the Space Council to explore with industry appropriate advanced launch vehicle designs. Congress must make sure that these innovations are spun off to the private sector as quickly as possible.

And if I may, since you are expressing an interest in this section, it is very clear to those I talked to in industry, that we need to not just have one agency move forward. We cannot just have, let us say, NASA, say this is what we are going to do in space. We cannot just have DOD do this either.

We need, and I am looking to the Space Council working with Congress and with industry, to get a dialog going—and that is an often used word in the government—but to really get some communication. And not just communication, but comprehension between industry and government.

I was at the Commerce Department 2 years ago, and I saw there that was not enough awareness on the part of the government to both what industry is capable of doing, and not capable of doing, and what the needs of U.S. Government are.

Senator ROCKEFELLER. Just to interrupt on that. I agree with you, it is a stunning statement. Why would that be true? I mean that is what the Commerce Department is all about or ought to be.

Mr. MANBER. Since you asked the question, I will take a broader perspective. I think that one hears very often from industry that they do not feel that the government is listening to them quite as much, as in the past, and that it is not in step with what industry is capable of doing.

I had the occasion yesterday to be up in New York talking to those bankers who are involved in a small commercial space project called Spacehab. And one of the issues that they raised repeatedly to me was they are not sure who in the government they should talk to. Do they talk to NASA? Do they talk to the Council? Do they talk to Congress?

And there seems to be no understanding of what the government wants.

Once again, do we mean NASA? Do we mean Congress?

We have no one place to sit down.

And it seems to me that we can learn a little bit from the Japanese there about government and industry working together.

The Japanese often speak of a third sector, which combines the public and private sectors, and their SAC is an example of this. I am not suggesting that we should emulate the Japanese, but I am suggesting perhaps we might learn from this and conclude that it is clear we need to bring industry and government together.

Senator ROCKEFELLER. It really is fascinating, is it not, the way we are just unable, in our government, to determine policy and priorities?

Marty Kress, who is sitting behind me, I think is probably aged 85 by now, although he does not look it, because of this kind of problem.

We are going to vote down catastrophic; we are probably going to put in capital gains, we are probably going to get a sequestration under Gramm-Rudman; we are probably going to go into financial chaos.

And then, every once in a while we have things about what should our priorities be in space?

And then we get conflicting visions from different agencies. Defense says this, and NASA does that, and there is no agency in the President's office, to put it all together.

It really is stunning, is it not?

Mr. MANBER. I will confess that I was one who did not think the formation of the Space Council was a good idea a year ago. I am now of the opinion that it is a good idea. And we do need some agency on the administration side to try and serve as a catalyst for all these conflicting demands.

Senator ROCKEFELLER. And do you see signs that that may work? Do you think it will work?

Mr. MANBER. I am optimistic that looming programs like the H-II and the ongoing Ariane and the realization on the part of domestic industry that they are no longer in control of world markets is bringing about a willingness to sit down.

Also, I will say this as a nonlawyer and go out on a limb here a little bit, but it seems that there is an incredible fear on the part of industry with the ethic regulations and noncompete and antitrust concerns.

At the Space Foundation we try and bring a lot of different companies together and the paperwork we need to get to show them that it is okay for them to sit down in the room with some of their competitors or would-be competitors is extraordinary.

And I think that is also part of the problem, that people today in industry are unsure of what would be considered permissible. If we are in a room at the Space Foundation and a reporter finds out about this, what is going to happen?

And that is a situation that cannot be minimized. It is a serious question.

Senator ROCKEFELLER. And it is just classically American as we tie ourselves in knots. In my work on methanol, I went to Detroit. We passed a bill giving an incentive to Detroit to start building flexible-fuel vehicles. I sat down with Ford, Chrysler and GM, and I was told by the counsel in my office that, for heaven's sakes, do not mention anything which would have to do with joint research. You just simply cannot do it.

Of course, not being a lawyer, I did that. And they all turned sheet white. But when the meeting was over, one of them came out to me and said they would give anything to be able to cooperate. Even as well as they are doing, they do not have the research capacity to tackle this flexible-fuel vehicle program on their own.

And so we hurt ourselves.

Mr. MANBER. And it is my hope, just to conclude your thought, that the Space Council will be an acceptable vehicle in our climate today for bringing some of these parties together.

If I may conclude, it is interesting to me, that in Japan the whole concept of commercial, meaning companies getting involved and taking on a greater weight of the development and operations

of space systems is far newer in Japan than it is in our country, and yet there are far more organizations devoted to bringing industry together and not that the Space Foundation is looking for any competition—the turf is hot enough as it is—but I would welcome and hope that in the coming years and perhaps even as early as months, we will see more of these types of organizations springing up to allow industry to get together.

The challenge is not competition from overseas in my view, but the competitive climate of U.S. industry today. U.S. industry cannot continue to compete in the international marketplace with EOV's and marketing ideas that are three decades old.

Nor will potential customers tolerate protectionist policies that keep them from using cheaper systems.

In conclusion, I have no doubt that there will be domestic production of launch vehicles throughout the 1990's. I fear, however, that unless we create a climate of innovation, those United States facilities may well be owned by the Japanese.

Senator ROCKEFELLER. Your testimony was excellent—different in a sense from the first panel and I think, therefore, particularly important.

I want to ask you a series of questions, some of which will be similar to those I have already asked, simply for the record because we have these hearings to build records as well as to learn from each other.

The United States has provided Japan, as I indicated to the first panel, with significant satellite and launch vehicle technology for some 20 years. Now the H-II program includes technology that might be of interest to American industry.

Can the United States obtain this technology from Japan?

Mr. STADD. Before I begin, I wonder if I could be presumptuous and say that I found the conversation that you had with Mr. Manber earlier very interesting, and I have some observations on it. May I at some point respond?

Senator ROCKEFELLER. Of course you may.

Mr. STADD. Would now be appropriate?

Senator ROCKEFELLER. Well, you pick it.

Mr. STADD. Well, I appreciate that.

Very quickly here, you both were discussing something that I found very troubling during my tenure in the government when I was both at Commerce and most recently at Department of Transportation.

There is a lot of discussion in the halls of Congress as well as in the White House about the need to encourage dialog with industry.

We have heard a lot about privatization in the last years, and it always struck me as a great paradox that even when we talked about privatization, I would almost say that industry was—that the impediments that were put in in terms of trying to get industry—dialog going with industry was tremendously counterproductive. And I include antitrust provisions and include the ethics regulations that have grown up.

And what I think Washington is unaware of is that every time there is a great deal of interest in ethics here, the aerospace industry in particular that reacts by a factor of three to four and there

are tremendous ethics bureaucracies growing up within the industry itself.

For example, myself, when I was attempting to get access to industry concerns about competition with the Soviets and the Chinese, the transaction cost in trying to bring industry into my office were unbelievable, and so what you end up with is anecdotal information that is episodic.

And, for a superpower that is dealing with these very fundamental issues, it seems to me that is really quite absurd.

Senator ROCKEFELLER. Does product liability enter into any of those concerns?

Mr. STADD. They did, but quite frankly, the industry is more concerned with macro issues like pricing strategies and things of that sort.

But I think the Federal Advisory Act—if I may, I think that requires some review. The steps you have to go through to establish an industry advisory group is very burdensome and lengthy. Sometimes it takes so long, it almost takes the industry outdated by the time you get the group together.

I do not mean to prolong that discussion, but it is something that——

Senator ROCKEFELLER. That is an important point.

Mr. STADD. To respond to your earlier question, from discussions I have had with our launch industry, there is interest in getting access to the H-II technology.

The feeling in the industry is that perhaps the United States-Japanese space cooperation agreement offers that opportunity.

The problem is that the Japanese, I understand, insist that any export of such technology be used exclusively for peaceful purposes.

The U.S. response to that, I understand, is that especially from the Office of Munitions Control, I understand, is that we do not want to enter into such exclusivity, that we reserve the right to use it for military purposes.

And so, I gather from industry that this sort of—they are sort of caught in this rather typical vice grip between the Defense Department's interest and that of other competing economic interests.

Senator ROCKEFELLER. I thank you for that.

Gentlemen, do you think—and I ask this question again—that we made a mistake in this country when we in 1969 agreed to provide Japan with space technology?

Mr. STADD. If I could begin, I think in 1969 the situation was such that the Japanese were really in the initial stages of getting into the business and really had very little to offer of value added to us, and quite frankly, I think, in retrospect I think it was a good deal.

I should remind the committee that the United States, in fact, essentially provided all the components for the first 12 vehicles called Delta vehicles out of the total 20 that were supplied to Japan. So, it was—essentially the Japanese were basically assembling pieces produced by the United States and from the standpoint of revenue, I think that was a pretty good deal.

I might add that that agreement, I think, also benefited from industry input, and I think that the problem with the H-II, at least from where I sit, is that our government sort of proceeded with

minimal industry input from what I can see in putting together the terms that we are now living with today regarding the H–II.

Mr. MANBER. Mr. Chairman, if I may, I appreciate the opportunity to actually look back to 1969.

I share Mr. Stadd's view that it was a good deal to do at that time.

I think the important point is what lessons can we derive from this transfer of technology, and I find it interesting that we are discussing an H–II launch vehicle that is not yet available.

We did provide the Japanese with the technology to have a launch vehicle, the H–I in 1969 as you say.

And the question is, why are we today, a few short years before the H–II vehicle will possibly be available commercially, first discussing this issue? Why did industry in 1970 or 1978, not focus on what the implications of the availability of a post-H–I vehicle would be.

And I think it is one of the factors that is so troubling, not just in the space industry, but in the high tech markets in general. The real issue the short-term horizon so common on our corporations today.

We've watched the Japanese since 1969 unroll all these Toyotas and Datsuns and Nissans onto our shores, and we should not be surprised now that they will attempt to do the same in every market.

Mr. STADD. Just to add to that, I found in the government that the analysis that both the intelligence community as well as the economic agencies were putting into commercial space activity was abysmal.

I think certainly have a talent on the Federal payroll that in terms of the priority of the agency managements were given to this issue, it was right at the bottom of the totem pole.

So, the types of analytics that I would be looking to in terms of advising my secretary, for example, was sketchy at best.

Senator ROCKEFELLER. Well, then, let me lead both of you perhaps too far in this question, and you can reject it.

The industry in our country complains about exactly what you have been discussing, the inconsistencies or the lack of U.S. policymaking in this area.

Some also say that there really is no point in looking at Japan as a future competitor because what the U.S. Government, in effect, is doing is putting our industries out of business. It is a rather extreme way of putting it.

Your reaction?

Mr. MANBER. Well, I suppose my initial reaction is that there will be some losers in domestic U.S. companies in the commercial space transportation industry.

There will be organizations who have marketed products that were good products, yet there is a very good chance that they will not be able to continue. That is unfortunate, but probably one of the things that we will see happen in the next few years.

Senator ROCKEFELLER. Without compromising the company or products, can you expand on that because it is an enormously important point.

Mr. MANBER. We have a backlog in cargo. Right now the major product, the major cargo for space transportation services is communications satellites. This backlog is due both to the grounding of the shuttle fleet, and also the loss of ELV's, our unmanned rockets, which also failed at the same time.

It is estimated by the industry that that backlog will be taken care of by 1992. And so right now there is a very good opportunity if you are in the space transportation business. By 1992, if no new demand develops, we may see the backlog disappear.

The question is, is there a world market for communications satellites big enough to sustain the Ariane, the Chinese Long March, the three providers of transportation services here in this country as well as no new companies such as Orbital Sciences and other new companies.

And so, on the one hand we may be looking at a glut of services. Now, that may be good for the customer, and we may see some of the costs of going into space decreasing. So, industry is concerned that someone may forced out,

Regarding the first part of your question about the inconsistent policies of the U.S. Government, I have been one who has complained long and loud about the inconsistent policies.

In this case I will slightly defend the government in that when you look back at the past few years, one see's a very consistent policy of reliance on industry for providing space transportation goods and services. I think first it was the Commercial Launch Act of 1982, and the creation of the Department of Transportation OCST office to oversee regulatory authority for space transportation, the President's decision in August 1986 to withdraw the shuttle from the commercial marketplace, and most recently the announcement in 1988 that the government will not own hardware and will procure services from the private sector.

That is a very consistent evolutionary policy, and I noted with interest that a few weeks ago there was a tiny notice in the Washington Post—and to me it was so shocking how small it was because it is an area of such concern to me—saying that the last government-owned rocket lifted off from Cape Carnaveral, and further stated that in the future the government will procure the services from the private sector.

So that, to me, is an extremely consistent policy, a series of actions that have taken place within the last ten years.

So, I would disagree with the premise that we have been inconsistent in this regard.

Senator ROCKEFELLER. That is interesting.

Mr. STADD. I think if the government remains true to the policies which the Congress in particular has been urging on the government agencies; that is, to rely to the maximum extent feasible on private sector vehicles, that there would be sufficient market between the government and between foreign governments and private sector satellite technologies to sustain a number of companies.

Even when I was in the government I never claimed that were any guarantees that the three major companies would all stay in business, but at least two—and I would—it certainly is in our interest to see at least several of the entrepreneurial ventures stay in business.

The problem comes down, again, to consistency, and there is a great fear of referring to these emotional words like targeting or whatever—I will see if I can steer on those reefs for a moment.

It seems to me what industry needs and certainly what their competitors are getting abroad is at least a government—in the case of Europe, for example, they have a pretty good idea what the architecture for the space transportation will look like by the year 2000.

As we sit here in 1989 I really have very little idea what our federal launch strategy is, and I have worked on it for a number of years.

I can tell you the competing factions in the U.S. Government, but I really cannot tell you what the consensus is in both branches of government as to what it ought to look like in the year 2000.

I have a feeling that Japan is systematically building toward that consensus and in a couple of years we will be able to tell you how the H-1 fits in with the H-II and the aerospace plane, the Hope, fits in with the H-II as well as the Japanese experimental module on the space station.

That is the sort of clear understandable government strategic thinking that is fundamental to a successful U.S. private sector launch industry. And, as I say, it is really missing.

I think that once that strategy is in place, then we are in a much better position to talk about the marketplace after 1992, 1993.

Observation about the H-II, I think the Japanese, if they perceive that there is a market—and Mr. Manber and I both know what these various conferences that are looking at the cutting edge of these new satellite technologies—the Japanese are always in attendance making studious note and so forth. And, of course, we have seen them do that in other sectors and seen the consequences of that note taking 15, 20 years later. They are taking notes, and they may well see that there may be a market for those payloads somewhere in the mid-1990's.

But I think if the Arianespace and NASDA arrive at some sort of joint venture, that is an enormous red flag for this and it is a very formidable trading partnership if it happens.

On the other hand, if the Japanese decide that it is worth doing, supporting their industry, government subsidizing that H-II organization to build a market, then we could well see two-tiered pricing, which we saw in the initial stages of the European launch initiatives when the government primarily pays for the production costs, and then the Japanese would be charging basic additive costs pricing strategies.

I will conclude by saying that any one of these scenarios is possible. I just do not see anybody in the U.S. Government, let alone in industry, thinking beyond the next quarterly return.

Senator ROCKEFELLER. It is wonderful, is it not? We do a little bit. I do not know how many people in the U.S. Senate know anything about space. I do not even dare look around at Marty Kress to get his answer.

The number of pressures and different subjects which we are meant to know, the small number of legislative assistants who have so many areas to cover for each individual senator—it is embarrassing in what we do not know and what we do not do and

what we, therefore, do incrementally in each direction proving nothing to anybody.

Another question on Japan. Do you believe that applying trade sanctions on Japan through Super 301 or some other mechanism is an appropriate response to what we have been discussing this morning, or do you think that there are other ways that would be more appropriate or that would work better?

Mr. MANBER. One response that comes to my mind is to build a better rocket.

I am perhaps being facetious to some extent, but I am not, and it gets back to the thrust of my remarks here in opening this is that one response would be to make sure that we have a domestic industry capable of being competitive.

Because of the Japanese innovations in satellite communications, satellites of which there have been some, launch vehicles, I think we will all benefit. And whether the mechanism that brings that about is the Super 301 or their overall need and desire to trade or the fact that their suppliers and customers will remain worldwide, I am not sure which mechanism will bring about a greater flow of technology between our two nations.

But I would urge industry and the U.S. Government to concentrate more on making sure that in 10 or 15 years we have several domestic products which are competitive, and to work for creating a climate to allow that innovation to take place.

Senator ROCKEFELLER. How, then, would you characterize—and I think, Courtney, you did a bit—how would you characterize, Jeff, the United States spacecraft industry's assessment of the Japanese competitive threat in this area?

Mr. MANBER. I would say that it ranges from some degree of fear to indifference. That is wrong of me to say because I should say it depends what level of the corporation that you talk to. There are many people who are concerned and try to push their companies to evaluate the impact of the H-II, their are many who are not concerned.

One of the problems you run into, if I can back up for a moment, is that we may have sold the space program incorrectly over the past 10 years when we urged companies to get involved. We have been looking for the financial community and corporations to get involved in terms of profit.

It is clear to the Japanese and it is clear to the Europeans but it is not clear to our industrial community that you also get involved in a program or in an industry like space for strategic reasons. You get involved not so much to produce the H-II launch vehicle but also to learn about new composite materials and to learn about software and hardware.

In that sense I am extremely disappointed that United States industry does not understand the value of being a strategic investor versus, let us say, a venture capitalist. We may be in a stage of our involvement in space today where there are very, very few opportunities for quick or even long-term financial return in that sense; but there are many opportunities for strategic return. I think that is one of the issues the government should confront.

So American companies will take a quick look at, for example, the space transportation market and say, well, there may not be

enough business there for us to turn a profit, and our financial arm is not interested. Missing is the senior corporate official saying perhaps it is in our strategic interest to get involved in working on this cutting edge technology.

Senator ROCKEFELLER. And to make a better one.

Mr. MANBER. Or make a better automobile, or make a better——

Senator ROCKEFELLER. That is the Halberstam point; right?

Mr. MANBER. Yes, that is correct.

Senator ROCKEFELLER. You both agree with that?

Mr. STADD. Yes. I think that sanctions certainly have a role. Of course, the United States has a credibility problem internationally. Many countries are accustomed to our rhetoric. As you alluded to, Senator, in some of your comments, the question is do we follow up on a sustained basis. That is always a question.

I would suggest another mechanism might be joint ventures with the Japanese. I have not thought this thing through thoroughly, Mr. Chairman, but maybe we ought to stand the world on its head. There might be areas in which we can leverage some of the Japanese expertise and resources and they ours. Again, we would have to do that in the long-term strategic context.

The thing I find troubling is that in the aerospace industry there is very little experience in international business. There is a great deal of experience in contracting for labor overseas and doing piecework overseas, but there is very little substantive international business experience.

In fact, the gentleman who worked for one of the major aerospace companies told me that he was given an assignment to set up an international business venture in the Pacific Rim and assumed that he would be taking advantage of a company's X number of years of experience. He looked around and said there were just no resources whatsoever in the company. This is a Fortune 50 company. I think that is quite a statement.

Senator ROCKEFELLER. I find the contrast between the first and second panels and the variety of points of view of our four witness extremely interesting. I do not know either of you gentlemen well, but I would sure like to. You are tremendously bright, thoughtful and candid in the way that you have responded. I think you, just as much as the first panel, have fundamentally challenged not just the government about which we have all spoken clearly but the private sector as well.

From my point of view, this was a very, very interesting hearing. I apologize for keeping you so long. I thank you very, very much.

This hearing is adjourned.

[Whereupon, at 12:32 p.m. the hearing was adjourned.]

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